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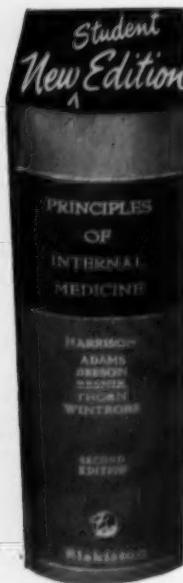
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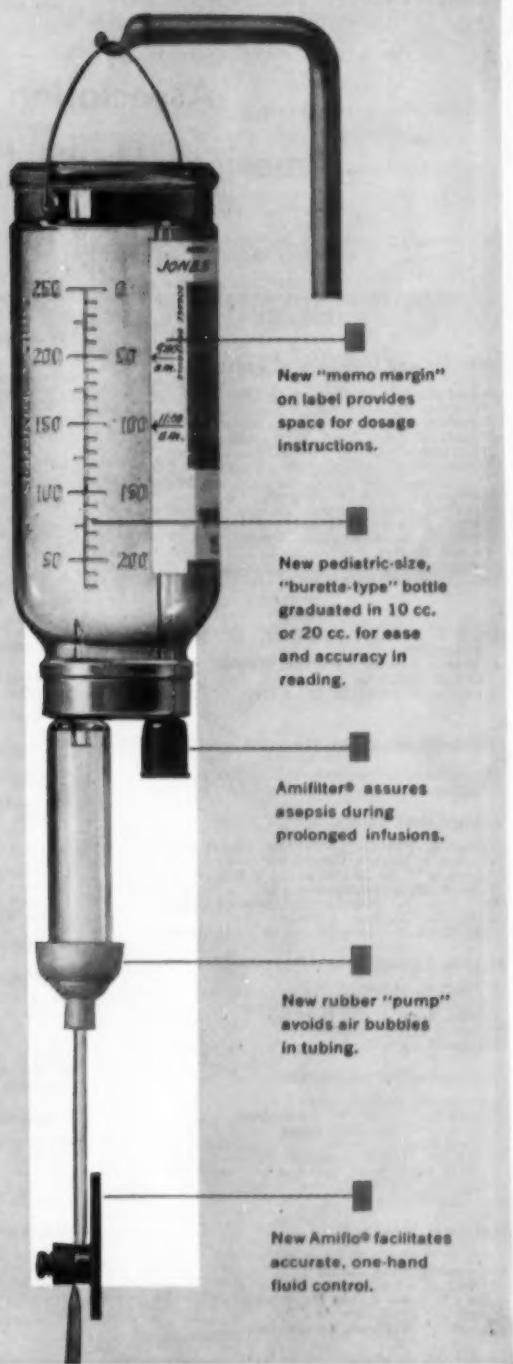
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- Pan American Medical Social Convention—October 15-22; Bogota, Colombia.
- World Congress of Anesthesiologists—September 5-10; Scheveningen, Netherlands.
- World Medical Association—September 20-26; Vienna, Austria.

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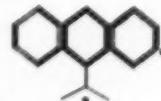
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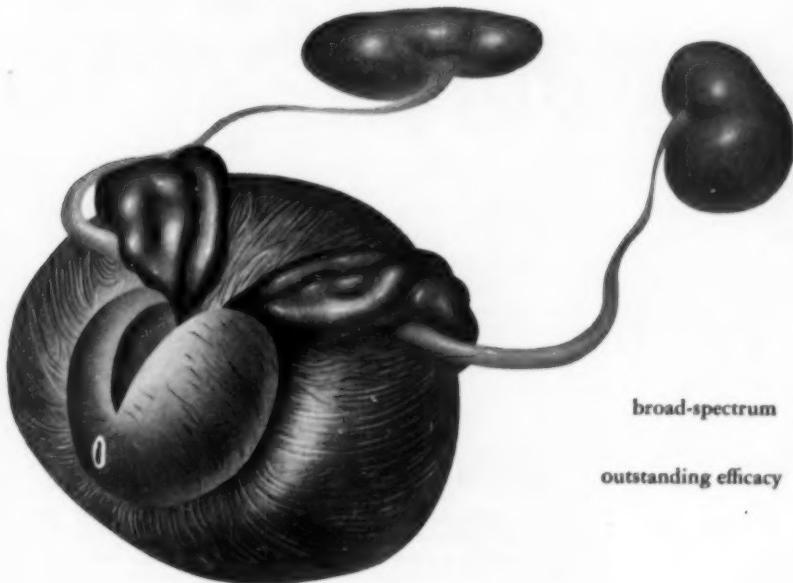
*Moore, T. D., and Mayer, R. F.: Hypaque: An Improved Medium for Excretory Urography. A Preliminary Report of 210 Cases. Paper read at 48th Annual Meeting of Southern Medical Assn., St. Louis, Mo., Nov. 10, 1954.

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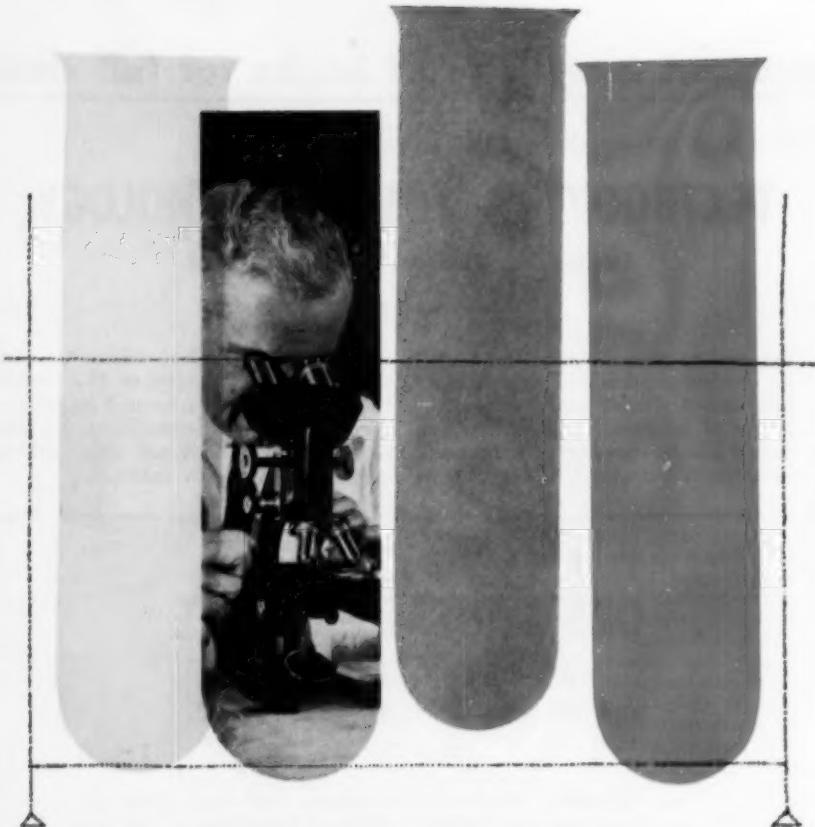
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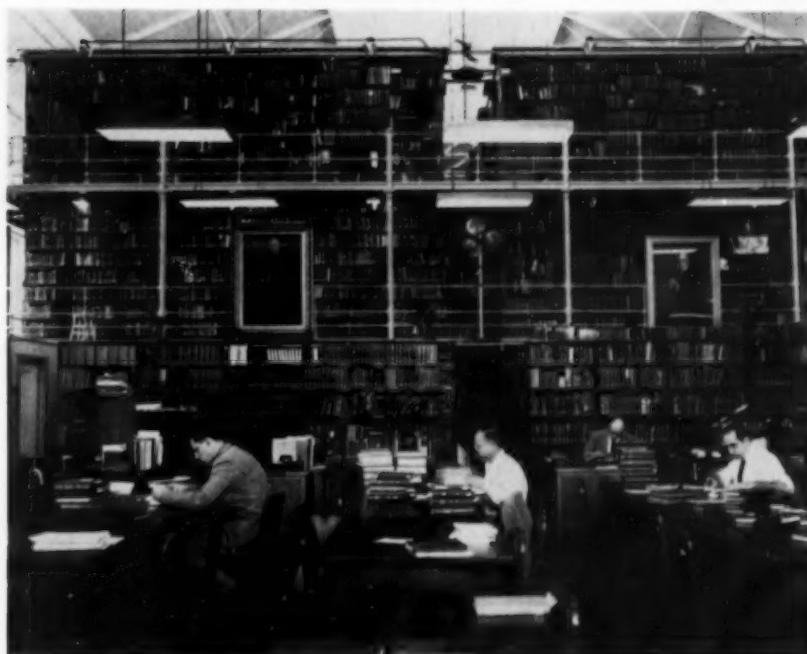
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Symposium on Medical Libraries in Relation to Medical Education



—Armed Forces Medical Library, Washington 25, D. C.

Foreword

CHAUNCEY D. LEAKE

THE HEART AND CENTER of any institution of higher education has for centuries been recognized to be its library. Here are collected the records of the past which bear on the work of the institution, and here is afforded an opportunity for voluntary self-learning. Here also is the

essential information for all phases of activity in training and research which go together in every first-class university.

Medical school libraries are particularly important in the educational process. Effective training in the complexities of modern medicine

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requires diligent self-learning. This can best be obtained by reading and working in medical school libraries. It also is helpful to engage at first-hand in research efforts in association with masters in the field. This research effort, however experimental or clinical, inevitably rests on the accumulated experience of the past, and this is, or should be, available in the medical school library.

Medical school libraries in the United States have vastly increased the scope of their activities during the past quarter century. Some have expanded from a pitiful few thousand volumes to many thousands with significant accumulations of medical periodicals from all parts of the world. Some have been deliberately designed to be the center of the medical education effort. Some forward-looking medical school libraries are serving as reference centers for all members of the expanding health team, including physicians, dentists, veterinarians, pharmacists, public health workers, medical case workers, physical and occupational therapists, laboratory technologists, radiation technologists and hospital administrators. Many medical school libraries are making an effort to supply health material to interested laymen and professional workers, especially in legal matters and psychology.

The well designed and operated medical school library can be one of the most effective instruments for promoting optimum health in a community. With an alert, intelligent and generously minded staff, a medical

school library can become the real center of the intellectual effort in the medical community.

In consideration of these matters, a symposium on medical libraries and medical education has been arranged for the benefit of readers of the Journal. The contributions come from all parts of the country. They illustrate the wide range of interest and activity in regard to medical libraries. Most appropriately there is a significant account of the Armed Forces Medical Library, which is perhaps the greatest contribution which the United States has made to medicine and health. Significantly there is also an important contribution on reference service. The accumulation of medical information has become so rapid and so great that we are in danger of not being able to find out easily what we actually may know. The aid of medical men everywhere is needed urgently to help maintain satisfactory indexes to medical literature, and also to support satisfactory bibliographic service.

Great help in a simple, practical way could be given to medical libraries by an effort on the part of physicians to make medical periodicals more uniform in size and format, for more ease of handling in medical libraries. Physicians, medical school administrators, medical school teachers and medical students all can help in the promotion of the common intellectual medical center, the medical library, by goodwilled encouragement and cheerful cooperation in its activities.

Trends in Medical Education and Their Implications for the Medical Library

WILLIAM DOSITE POSTELL

DURING THE LAST few years librarians in charge of medical school libraries have been receiving some odd requests for purchase, if measured in terms of the traditional literature of medicine. The requests are for books and journals on higher mathematics, electrical engineering, physics and electronics. The librarian's first reaction is to turn down these requests with the suggestion to the faculty member that books of this type are not part of a medical collection. You temper your refusal by suggesting that these books be borrowed from other libraries in the community. But such requests keep coming, and, whereas the first need may have been felt in the physiology department, now other departments are beginning to express their desire for material of this type. It soon becomes apparent that some study or thought needs to be given to these new trends in medicine to determine the library's responsibility. For the purpose of this discussion these trends are grouped under two headings, instrumentation and communication.

In this atomic age, medicine is making use of the many recent discoveries and inventions, particularly in the field of instrumentation. In some of the basic sciences, for ex-

ample, the physiology laboratory, the employment of electronic instruments has become routine in teaching procedure. Where recordings were formerly made on a smoke drum, a mechanical device, electronic devices are now used. Some of the instruments used in medical research are the oscilloscope, flame photometer, photo-electric colorimeter, electroencephalograph and the cryoscopic osmometer. The problem involved is not just learning how to operate these instruments but also to determine their other possibilities. For example, the electroencephalograph is presently used to record brain waves, but there are no doubt other uses for this machine. The working out of these other possibilities can be determined only if there is an understanding of the principles involved. This requires a knowledge of higher mathematics and mechanics. Many of these instruments have special application to specific problems of research which may or may not become routine in medical education.

Another reason for the interest in higher mathematics is the problem of communication, not only between members of different specialties but between members of the same specialty. For instance, members of the psychiatric department may all be working on the problem of catatonic schizophrenia. The problem is being studied by a Freudian, a Pavlovian,

Mr. Postell is the Librarian of the Louisiana State University School of Medicine.

a geneticist and a clinical psychiatrist, all with their own theories and methods of investigation and their results interpreted within the framework of their particular specialty. Each of these disciplines has developed independently certain theories and treatments, and the difficulty is how each discipline may arrive at an understanding of the approach to the problem by the other. This is essential if a thorough investigation of this mental disorder is going to be undertaken. Then too, a psychiatric department may be composed of members with various types of training. For example, a psychiatric social worker, psychiatric nurse, psychologist, neurologist, electroencephalographer, electrical engineer and psychiatrist with different background training are all members of a psychiatry and neurology department. The problem here is communication, and what is proving to be the media is mathematical logic, the media for all the sciences.

Formerly Unrelated Fields

Scientific knowledge is growing by leaps and bounds, and medicine is taking advantage of this knowledge by branching into fields which were hitherto considered unrelated. In general, it can be stated that this trend is in an exploratory stage with some exceptions as far as medical education is concerned. The faculty is learning. What then is the part the library should play in assisting its patrons to acquire this new knowledge? Ideally a library should provide every book needed by a borrower when requested. But of course no library can even think of approaching the ideal. We make adjustments and try to provide the greatest number of books for the largest group of patrons. This adjustment must take into considera-

tion many factors, the purpose of the institution, the interests of the faculty and the teaching program, to mention a few. Then all of these factors have to be evaluated and judged within the framework of the budget. Unfortunately, while the demands on the library have been growing, the library's budget for purchases has not increased to the point where it can assume responsibility for all areas of interest of the faculty or even the teaching program. The librarian is faced with the problem of the increase of medical literature per se and the increased cost of these items. An additional factor to be considered is the handling of material which is not strictly medical. A medical cataloger who is suddenly confronted with the problem of cataloging electronic material finds that she has to spend a considerable amount of time in training herself to catalog such items.

Solutions

However, in the light of these factors, the librarian must recognize these new trends and the library's responsibility of providing some material for the faculty interested in these problems. A medical library located on the same campus as the remaining colleges and schools of the university is fortunate, because such books will be a part of the university's library collection. In many instances though, these books may have to be duplicated in the medical library if they are in demand by the faculty members in other colleges of the university. For a medical library not as fortunately situated, another solution must be found. The solution is threefold, borrowing from other libraries, making limited purchases and educating the individual and department to their own respon-

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sibility in acquiring material. In borrowing from other libraries it is well to remember that public libraries frequently have engineering and technical libraries which are available to medical schools. Neighboring colleges and universities can be of help. Then there is the privilege of borrowing through interlibrary loan which must be taken advantage of to the fullest. In purchasing reference books in the fields of higher mathematics, electronics and physics, the library should limit itself to those books which will be used by several individuals or departments. It is also the responsibility of the library to provide books which are used for teaching purposes and which can be made readily available to the student. Since laboratory teaching in physiology is employing electronic instruments, the students may be interested in acquiring more information about the principles of these instruments. However, all too often a request for purchase is the responsibility of the individual and not the library. Any book that a faculty member needs to keep out indefinitely is not the library's responsibility but

his own. This can be likened to a carpenter who is hired to do a job. We are not required to furnish him with a hammer and saw as those are his tools.

Likewise the library cannot be expected to furnish a tool to a faculty member, and certain books are quite likely to fall in this class. Also, books relating to the particular work of a department is a departmental responsibility. This depends upon the policy of the school in regard to building up departmental libraries. Frequently the department would do well to purchase books on the use of the instruments they are working with instead of buying books which are already available in the library.

In conclusion, the librarian has to be aware of the demand for books and journals in the fields of higher mathematics, electronics, physics and electrical engineering, and some limited purchases should be made at this time. From time to time, this trend in medical education should be re-evaluated in terms of the library's responsibility in order that provisions be made in the budget to acquire this additional material.

Here is a Medical School Library

BERTHA E. HALLAM

A LIBRARY IN AN EDUCATIONAL institution might be likened to a hub toward which lines from all departments converge. It might also be called an example of both convergence and divergence. So the library may be said to be like a reservoir to which people come to drink the waters, but, also, from which these waters may be loosed through channels to bring its values to those in the surrounding areas. What has the modern medical school library to offer? Whom does it aim to serve? How are its potentialities made known to those who converge upon it and those who wait outside to receive its message? Its status as a factor in the teaching program hinges in part on the manner of its fulfilment of these phases of its task.

The medical school library offers literature in expansive and ever-expanding volume to cover medicine and the allied sciences, modern and historical, in all their intricate ramifications. Among other things, this means there is a large and comprehensive selection of current periodicals on file, with the back volumes for many years of the same titles. It means there are in the library many indexes, abstracts and reviews of the advances and reports detailed in these periodicals. It means there is in the library a carefully selected assemblage of books, such as text-

books, monographs, encyclopedias, reference works, medical biographies, medical histories and allied material. It means that there is in the library a collection of pertinent historical literature in its original form in as great an array as can be obtained.

It means that the library contains pamphlets, reprints, pictures and objects of medical interest. It means that this mass of literature must cover contributions from the various countries in the world. It means that all this material must be organized by catalog, arrangement, directories and other methods to be readily available. Some people whose main interests lie in rather narrow specific fields have no conception of the extent to which these statements are true until a need outside their fields brings realization to them. The librarian must be cognizant of the literature in all areas of the health sciences, must have it on tap or know where to find reference to it.

Most medical school libraries are assembled by a plan which will assure coverage of all fields to the degree deemed necessary to give proper service to the teaching staff and research workers and students at the institution. Such a plan is never static. Constant vigilance must be exercised to assure that it keeps step with curriculum and research project changes. To be sure, financial ability to give coverage may vary from institution to institution but careful purchasing, ingenious use of

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available material and interlibrary loan aid and microfilms can do much to overcome this difficulty.

Who Uses Library?

For whose use is the library collection assembled? From the point of view of medical school, the library is a reservoir of literature to supply the teaching staff, the research workers, the students and the employees. A specific library may be used by groups outside the school, too, and this fact may influence the growth of the collection, but for this present writing, the school is the unit under consideration. Everyone familiar with the ramifications of a modern medical school will realize that the population of the school may number in the hundreds and that these hundreds of people have myriads of individual interests in the health sciences. To the library these people are all urged to look for the literature to further any or all of these interests or avocations which may border the field.

So there is a collection of literature and a clientele to use it. It remains to bring the two together in such a way that the literature may be plumbed to its depths for the advantage of the readers.

How are the potentialities of the library collection made available to those who converge upon it? The offering of aid to the reader in the library tends to be comprehensive. This statement should not be construed to mean that the work of the individual is done for him. Rather, the members of the library staff carry on a continuous informal teaching process. The basic idea is to guide the inquirer to use efficiently the various facets of the library collection, such as the textbooks, monographs, periodicals, periodical indexes, collected reviews, encyclo-

pedias, reference literature, special collections or local information which may have a bearing on his subject. This guidance may extend to sources outside the library if the library collection is not adequate.

In many schools, the library staff carries on a formal teaching process by giving class lectures in the use of library materials to medical students, nursing students, student dietitians, student medical technologists, student x-ray technicians, special students and other groups studying at the institution. These classes may be few or many in number of class hours. In either case, it is an excellent plan to correlate the lectures with other class assignments or subjects so that the library information may be timely for the student.

The library aids the teaching staff by serving as a literary laboratory supplementary to the class room lectures, the basic science laboratory work and the clinical experience which is given the students. The teacher may request the students to read designated books, or books on a given subject, to prepare a paper or report on a subject of the student's choice, to read some specified references, to search for and report on periodical material, to give a discussion on designated periodical issues or groups of periodicals. For all such assignments or any others the teacher's pedagogic ingenuity may devise, the librarian participates in the teaching by providing the requested materials and by guidance to the student in the best methods to complete the work.

The librarian aids all members of the teaching staff and research workers by conferring with them regarding the literature needed in their work and by filling these needs. And often the librarian aids these people by informing them of books or ar-

ticles pertinent to their work which the library has received.

All these examples of aid are applicable to people who converge upon the library. What about those who are reached by divergence, or, to follow the simile used at the beginning of this paper, by the water which must be loosed through channels to bring values to those in the surrounding areas? An active and continuous public relations program will serve in good stead to spread the word about the library's potentialities.

Public Relations Program

Not only the librarians, but also all other members of the teaching staff and others who are interested in the library can take part in this. Occasions to speak a word in favor of the library may arise at most unexpected times and places. For instance, a word to a luncheon partner in the school cafeteria may open vistas about the library which that person never envisioned. School news sheets are valuable aids in disseminating information about the library. Lists of additions to the library may be placed in strategic spots about the institution, and notices be sent to departments specially concerned.

Insofar as possible, all newcomers to the school staff can be invited by letter and by word of mouth to use the library and can be taken on a guided library tour by arrangement. The library can be represented on the faculty by the librarian and by other staff members who are engaged in formal or informal teaching. If they take an active part in faculty duties and faculty social functions it redounds to the prestige of the library

in the eyes of all the people at the institution and emphasizes in their minds the teaching function of the library. Members of the library staff should attend medical and scientific lectures, especially those by visitors who have been brought to the school to report on their original investigations in the field of the health sciences, and the library staff members should follow through by stressing publicly the library's offerings in the field in question. Exhibits of books, posters, pictures and other objects, and data placed on display in the library and in strategic spots which may be available for such a purpose in other parts of the school help to inform many individuals of the offerings available in the library. And first and last, in this connection, it should be made crystal clear that the library is for the use of all people connected with the institution. Too often individuals are timid or ill-advised and hesitate to come in the library even though they may have the desire to use it.

It is obvious that this paper is directed to all people in the medical school family who are working to impart knowledge to students or wish to acquire it themselves. The part the library plays in the school, its educational and helpful value to the teaching staff and to the students has been expressed by an accumulation of examples and statements. Doubtless, however, other means by which it aids and teaches will spring immediately to the minds of the readers. This is a hope. Should the result be the increased use of the medical library, it will be a cause for rejoicing. An unused medical school library is a sorry sight.

The Medical School Library: Its Present and Potential Services

MILDRED R. CROWE

THE MEDICAL SCHOOL library of today is an organization actively participating in the teaching and research activities of the institution which it serves. The demands upon it have increased tremendously because of the change in teaching from mere memorizing of textbook material to the method wherein suggested collateral reading of journal articles is employed. Increase in research has also been one of the major means of emphasizing the library's importance to the institution. Then, too, many medical school libraries have become medical center libraries serving also the schools of dentistry, nursing, pharmacy, public health, laboratory technology, social service, dietetics and hospital administration. These developments together with the unprecedented growth of medical literature have brought the library to the place where it is in reality becoming the actual educational core of the medical center.

At this stage in the development of the library it might be wise for the medical teacher and practitioner to consider three pertinent points about this vital department of the medical school.

1. The increased demands upon the library have emphasized the fact that highly trained personnel are

needed to direct and service it. The training, ability and experience of the librarian and his staff determine to a great degree the scope of services which the library can offer.

2. The medical school library of today extends many helpful general services with which not all medical educators are familiar. It would be of great value to the medical profession as a whole if these services were utilized to the fullest.

3. The medical school library could provide additional centralized services which would be both economical and time saving to those in medical teaching and research if the proper financial support were made available.

The Medical Librarian

In the library as in every other department of the institution the competence of the person in charge is paramount. If the library is to be good, up-to-date and worthy to be considered a single criterion by which a medical school may be judged, the librarian must be well-trained and capable. He should possess many qualities which would help him not only to be a good librarian but also a saint, a scholar, a teacher and a technician. The basic requirements, however, include a four-year college course with strong emphasis on foreign languages, a degree in library science and training and experience

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in the specialized field of medical librarianship. While attaining these requirements the librarian should have acquired the habit of continuous study so that he may be ever cognizant of the important developments both in the field of medicine and in the principles and techniques of librarianship. Throughout this educational process it is hoped that he will have absorbed not only a knowledge of the history of his subject fields but that he will also have acquired the historical point of view.

As an administrator of an important division of a scholarly institution he should have in addition to these qualities the ability to place the library's interests in the forefront of all his dealings. This means a broad point of view whereby the needs of all the library's users and not just one or two important groups can be successfully fulfilled.

If with all these qualities he also possesses tact, humility, good humor and a deep love for the healing art and humanity in general he will be the ideal librarian and a truly great asset to the institution which he serves.

The medical profession wants understanding, friendliness, interest and cooperation from its librarians. The opening speech of the First International Congress on Medical Librarianship might seem to indicate that the profession is receiving its wish. "Two medical historians, whose names are known to all of us, and who have used medical and general libraries extensively in several countries, have remarked on the, what seemed to them, exceptionally helpful and companionable qualities of medical librarians as compared with less or other specialized librarians. I confess that I have often felt that we were peculiarly delightful people, for librarians. If it be true that we

are, the explanation is a simple one. We serve the sons and daughters of Aesculapius—a most delightful and inspiring lot. In addition, and at a remove just distant enough to permit us the luxury of not erecting defenses, our work daily brings us face to face with the most humanizing problems of humanity. Let us hope that just possibly a little medicated stardust does drift over onto our shoulders from time to time."¹

General Services Available

Acquisition of material. The main function of the library is to provide the material which will be needed by its users. This function is a dynamic, ever fluctuating, never static process by which the library's collection is made as complete as possible. It is a basic service upon which all other services of the library depend. It requires a librarian who is thoroughly aware of the changing concepts in medical education because recent developments make material integral today which would have been considered peripheral yesterday. It also requires a librarian who is fully cognizant of the teaching and research projects of the school and of the special interests of the faculty. It demands a person who keeps up with current book reviews, publishers' announcements, dealers' catalogs and who is correctly informed of the current prices for old and rare medical material.

In planning his acquisition program the librarian must supply the needs of the scholar as well as of the casual worker. This means that he should heed the advice given by such leaders as Oliver Wendell Holmes to remember that there is no literature either old or new which cannot teach something, even as an autopsy teaches medicine. A successful acquisition

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plan calls for a quantitative and qualitative collection and selection of material of both the past and present, of foreign and American literature and of book and nonbook material such as pictures, slides, photocopies and films.

With the broadening horizons of medicine, which now extend far into chemistry, physics, mathematics, biology and other fields, there has come the need for a parallel broadening of the library's acquisition program. Since it is not possible for every library to have every item which its readers need, librarians have tried to solve this problem by interlibrary cooperation. Through mutual generosity books which are not in one library can be borrowed from another. Thereby, every library's scope of acquisition is greatly enlarged thus making the facilities of practically the entire medical world available upon request.

Organization of material for availability. When the process of identification, selection and obtaining of material has been accomplished it becomes the task of the library staff to organize the collection so that it may be easily accessible. The first step therefore is the classification of material so that it may be placed on the shelves in logical proximity to similar subject matter. The material is then cataloged wherein the contents of the book are noted under specific headings for the reader's convenience. Today cataloging is done primarily from the reader's point of view so that he may easily find what he needs. The cataloging department requires well trained librarians who have a basic familiarity with the subject matter and knowledge of two or more foreign languages. Catalogers must be constantly aware of the changes within the field of medicine so that they may know how to

bring out the most important aspects of the book. Since the catalog is the index to the library's collection the efficiency with which it is prepared determines the library's desire and ability to give the very best service possible to its patrons.

Instruction in the use of the library. The literature of medicine and its associated fields has become so highly complex that some form of instruction in the use of the library is now practically mandatory. Important among the recommendations for medical school libraries given in the Dietrick-Berson survey is this: "Librarians and faculty should give as serious thought to methods of effectively introducing the student to the use of the library as they give to instruction in other courses in the curriculum."¹²

Instruction is necessary not only for students but for those faculty members and practicing physicians who have not been fortunate enough to have attended a medical school where such a course was included. Sir Francis Fraser, distinguished British scholar, has pointed out the need for such instruction: "Forty years ago, when I was a medical graduate of only a very few years' standing, a librarian spent nearly an hour showing me how to use a medical library and how to look up subjects on which I was about to work. She introduced me to the vast well of information contained in the *Surgeon-General's Catalogue* and showed me how to use the *Index Medicus* and to follow up my references. That opened to me a gate to one of the great joys of my life."¹³

The type of instruction given today varies to suit the needs of the clientele involved. In a medical school library attention is directed primarily to the teaching of students. This instruction may be given either by for-

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mal or informal courses but the formal, required and graded courses are to be recommended. These courses include lectures followed by assignments to be done in the library, and an examination. Usually such instruction is given in the first year. It may be followed by several review lectures later on, particularly in the senior year. The library course may be planned in conjunction with other departments in which a term paper is required so that the library staff may instruct and supervise the work of the student in the preparation of the paper.

The medical school library is meeting its obligation to its interns and residents by offering them special instructions also. This, too, may be in the form of lectures, conferences, detailed explanatory tours of the library or day-to-day guidance and help when requested. Some librarians hold annual department conferences to which the chairman and all members of the department are invited. Material—both new and old—pertaining to the specialty and acquired within the past year is arranged for exhibition and discussion. This permits the members of the department to keep up with the recent publications in their field.

Many librarians provide special instruction by means of library handbooks which serve as instructional guides to the library explaining in detail such points as the hours of opening, arrangement of book and nonbook material, names of the staff and general policies. In most libraries there are maps, signs and printed directions which serve as guides to the newcomer. All these are helpful forms of instruction and at least some of them are available in any medical school library.

Liaison service between sources of material and the library's users. After

the material has been organized, classified, catalogued and shelved it must be made available to the reader. The two departments of the library which serve as liaison forces are those of circulation and reference. The services provided by these departments are tangible, easily seen and are usually those with which the users are most familiar and for which they are most grateful.

The function of the circulation department is to give the book to the reader. This simple statement presupposes many basic factors, the most important of which is "where is the book?" In a medical school library such a query can present a difficult problem because of the diversity of users. These users, however, can be separated into two groups (1) the resident group including interns, residents and research personnel who want every book to remain in the library so that they may obtain it when they need it and (2) the outside group composed of students, and practicing physicians who prefer to take the material home with them. The most satisfactory way of surmounting this problem is to have two copies of the most used material, one for circulation and one to remain in the library. This solution is not practical for every library but it is one which many librarians would like to put into practice if funds and space were available. However, whether the book is available or not the circulation personnel will make every effort to obtain it as soon as possible for the person who wants it. Members of this department are chosen for their graciousness and friendliness and are firmly grounded in the fact that theirs is the unique privilege of having every opportunity to win and keep friends for the library.

Reference service is the activity

whereby the difficult, the elusive and the intangible items needed by the library's clientele are searched for and in most cases produced. This type of service may vary in scope from quickly answering the run-of-the-mill queries through solving the intricate problems which require days of search and research.

Real reference service does more than just refer readers to information. It is a willing and helpful service which has been long in effect in our best medical libraries. Eight years ago Dr. James Herrick expressed his great admiration for it when he quoted Ella Salmonsen, the head of the medical department of the John Crerar library, who said to him: "You are not to feel that I am giving you more time and attention than I should when I try to help you find the reference you are looking for. The function of this library is not merely to hand you the book you may want . . . we feel it a duty and a pleasure to help any one who is seriously searching in our volumes for knowledge."⁴

The two groups of library users—the resident and the nonresident—differ in their ideas of reference service. The resident personnel usually prefer to find material for themselves, the nonresident group want and need as much service as the library can give. The librarian cannot permit the ideas of one group to influence the policies of the library but should see that both are served to the best of the library's ability.

The general services in effect in many medical school libraries today are not, however, utilized to the fullest. It is at this point that the faculty can be of immeasurable help. Personal example by the faculty is of utmost importance in guiding the student to the advantages which he may obtain from the library. "The

teacher must help him capture an ability to evaluate his work in terms of its historical relationships. The student must be made acutely aware of the fact that as a scientist one of his major functions must be the integration, interpretation and summarizing of masses of previously collected data, just as much as his function will also be the gathering of data in strictly novel research."⁵

Potential Services

There are also special services which at present are offered only by those libraries whose budgets are adequate enough to supply the required trained personnel and whose administrators feel that such activities are properly a function of the library. In institutions where they are provided they form the particular means by which the final touch of cooperation by the library is added.

Bibliographic service. Many library patrons have need of the service which consists of checking and compiling bibliographies upon request. This is an activity which although controversial and time-consuming is given in libraries where there is an adequate staff of trained librarians. Many educators would probably be most interested in the opinion of Dr. J. B. de C. M. Saunders concerning this type of work. After collecting pertinent material he concluded that both checking and compiling of bibliographies for research purposes could be accomplished with far greater efficiency and at less cost to the center as a whole if the library staff were enlarged enough to take on the work now handled by a miscellany of student help, departmental clerks, research assistants, laboratory technicians, or faculty members themselves all working in the library

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and requiring considerable assistance from the library staff."

Continuous bibliographic service is a specialized form of this activity. It is a valuable service by which the interested inquirer is informed immediately of the latest material in his field. Libraries which offer it are serving as real collaborators of the medical worker and researchist.

Editorial service. The function by which the library staff aids the physician in the preparation of a paper for publication is called editorial service. "If we agree that the sum total of medical knowledge is built up of the contributions of individual workers and that, therefore, it is the duty of every doctor to report and interpret worthwhile findings, then every librarian should be ready and willing to assist the prospective author earnestly seeking help."¹⁷ This service covers the reading of the paper for clarity, conciseness and grammatical construction, confirmation to the rules of the periodical to which the article is to be submitted and verification of references. Whenever this service can be offered it is one of the fine contributions that the library can make to medical education.

Abstracting service. The service by which the contents of articles are summarized upon request is not generally available in medical school libraries. Other special libraries such as those of pharmaceutical companies have long realized the importance of this activity. This service may become a necessity because of the continuing growth of medical literature unless the publishers of the existent medical abstract journals can produce abstracts faster and more comprehensively.

Translation service. Since medicine is universal and its discoveries are reported in many different languages

it is necessary for the physician to have access to translation of the pertinent material which he needs. Translation service at present can be found in few medical school libraries but it is only logical to assume that the demand for it will increase and sooner or later this demand must be met.

Since all these services, however, are not currently available within the library many librarians keep readily accessible up-to-date files listing where information on translation, abstract, bibliographic and manuscript services can be obtained locally and nationally.

Conclusion

The library, because of its growing importance in teaching and research, is rapidly becoming the educational center of the medical school. If financial support were available the library's cooperation could be extended to include such functions as abstract, bibliographic, manuscript and translation services. Centralization of these activities in the library could be economical and time-saving for the institution's professional personnel.

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Cultural and Archival Contributions

of the Medical School Library

MARY LOUISE MARSHALL

THE FIRST AND MOST important function of the medical school library is to aid medical education by serving the immediate needs of students, by serving the needs of faculty in their work with students at the undergraduate and graduate level, and in research. Much has been written on this subject and the contributions of the library and the library staff in medical education are now well recognized. There is, in addition, a broader service which the medical library may give by aiding in the student's cultural development and in helping to prepare him for a more satisfying life through acquaintance with the great in medicine through books.

In the trend toward specialization which has had so phenomenal a development in this country, there has

been a tendency to curtail or even omit those facets of a physician's training which are not directly connected with the practical aspects of the medical field. This is easy to understand as one realizes the elaboration of medical knowledge resulting from research during the past half-century. The physician, however, needs more than a knowledge of the diagnosis of disease and its treatment if he is to fulfill his heritage. Life is for living in its broadest sense, and education must fit the physician for living as a member and a leader of his community. A knowledge of the cultural relations of medicine contributes to the preparation for such a life.

An appreciation and knowledge of the history of medicine serves a practical as well as a cultural purpose, however, for as Osler has said, "By the historical method alone can many problems of medicine be approached

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profitably." Increasingly, teachers are coming to feel that a knowledge of medical history is of benefit not only in an abstract sense, but also in aiding students to establish a perspective for present day problems, and in emphasizing the continuity of medicine. It is the library's part to make available in books and journals the materials illustrative of the history of medicine which will best serve these purposes, and through lists and exhibits to interest students in them.

Insufficient Funds

It is true that few medical schools have sufficient funds to purchase from university appropriations rare books and the classics of medicine in original editions. Many of these titles, however, may be purchased in facsimile or reprinted editions which are even more practical for everyday use. The librarian with imagination, enthusiasm and an eye for possibilities may do much in fostering the interest of patrons as donors of historical materials. A physician may often be encouraged to collect in his own library the "firsts" in a subject field of special interest, as an eventual gift to the medical library, and librarians are glad to give bibliographic aid in the selection and purchase of such titles. Rare material may come from a private owner to the library for a safe and permanent home and librarians should be alert to all such possibilities.

The question of what constitutes rarity in judging value of books is a moot point. Scarcity alone does not make a book "rare." Angle has described a rare book as one which "is important, desirable and hard to get." Within the scope of this definition may fall much material on local

medical history which every medical library can and should collect. Most of this may be acquired without cost in the form of vital statistics from hospitals, cemetery and church records, letters, diplomas, case-books, lecture notes, minutes of societies, bills, personal reminiscences and pictures. Librarians should use every means to secure such material from private sources whenever available, perhaps at the death of a local physician. Great care should be taken in acknowledgment of such gifts and their display in suitable form. Publicity given one gift often results in one from another source, and serves to emphasize the library's interest in local history material.

The files of medical journals published in one's own region assume in the historical collection a value often surpassing their scientific importance, for here one finds personal notes regarding physicians as well as items concerning local institutions, boards of health, hospitals and societies. Here also are published obituaries of physicians and even portraits often so difficult to locate elsewhere. Scientific content will include medical accounts of local epidemics, sanitary conditions and legislation, constituting a mass of contemporary medical history of the region. Before the rise of American medical journals this type of information was published in local newspapers. It is well to remember this in gathering materials for the local history collection, for if the newspapers themselves are not available, the pertinent articles may be reproduced by photoduplication.

Collections having to do with the history of medicine should contain books about medical history as well as editions of the classics themselves. In this field also much good material may be secured without cost, as evidenced by the historical studies spon-

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sored by pharmaceutical houses. Reprints of historical and biographical articles may usually be acquired from the authors, even when the original publications are not available. It is an observation in libraries, soundly based on experience, that even a small historical collection, once established and publicized, draws to itself additional items of similar nature even more rapidly as the library's holdings increase in quantity and importance.

One type of historical material which every medical library should accumulate is the archives of its own institution or organization and as many other such local bodies as possible. Muller and his associates have defined an archives collection as "the written documents, drawings and printed matter, officially received or produced by an administrative body or one of its officers, insofar as these documents were intended to remain in the custody of that body or of that official." The library is the natural custodian of the archival material of its own institution, and it is to the library that calls for such material should be directed. Even the smallest library may perform a valuable service in preserving the records of its own administrative body. Often the term "archives" is interpreted broadly to include not only published and official records but even correspondence and manuscript notes concerning projects, surveys, etc. Each institution must establish a policy as to the extent of archival materials to be kept; a committee of which the librarian is a member is sometimes given authority to establish and review this policy from time to time.

It should be remembered, however, that the library must consider the custodial cost of even material received free. Most libraries rapidly

become crowded and shelf space is at a premium. Staff time in processing, indexing and servicing such materials becomes increasingly expensive. Consideration in determining a policy of inclusion which should be mentioned are budget for competent staff, special supplies and files for caring for the materials, space, interests and proximity of other libraries with similar collections. Contrary to ordinary belief, as a library grows the cost of processing a single item for the collection increases rather than decreases. Small libraries can function well with very simple organization, but the basic organization of even a small collection in a medical school should be planned in such a way as to allow for ultimate growth. Policies of acquisition for the collection should be established and reviewed periodically.

History Collection

The organization of the history collection in a library must depend on the nature of the material and plans for its use. One part may be composed of the archives and all local history materials. A second part may include other original publications considered rare, either from the standpoint of history or medicine, and a third section may be composed of books about the history of medicine which will serve as reference sources in the use of the collection.

Firm policies of acquisition should be established. It should be decided whether the library will accept material on loan. In favor of such a policy is the fact that items accepted on loan may later become gifts. On the other hand, custodial care given to material which the library does not own may create more problems than benefits. A precedent may be

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created which will require acceptance on a similar basis of items of little value, or even duplicated in the library's collection. Books on loan may be the nucleus around which a collection is built, only to have them withdrawn at the later whim of the owner or his heirs. There is also the problem of possible damage to such items for which the library is at least temporarily responsible even without owning them. It is best that a mutual agreement in writing outline the library's privilege and responsibility concerning any loans so accepted.

Another problem with which librarians are confronted is the donor's requirement that the books he gives be permanently segregated in a permanent collection. It is seldom understood that usefulness of the material is often curtailed in direct proportion to such segregation. This is not true when the collection is devoted to one subject and if the titles on this subject which the library already owns may be shelved with it, thus naming the subject collection for the principal donor. The use of a gift bookplate naming the donor will often serve instead of actual segregation of the collection. In any case, the decision in each case should be determined and should rest on the use of the material in the best interests of the library and its patrons.

Library literature is full of organizational techniques for unusual materials, such as pictures, memorabilia and clippings; descriptions of equipment for their filing and attractive display may be found in library supply catalogs. The librarian's attention should be particularly directed toward possible use of the materials, and organization should follow this lead. Historical materials may require more detailed indexing than other

types, and as the historical collection grows various special indexes may profitably be developed showing the library's holdings by date of publication, in Americana, in manuscripts, illustrations by subject, signatures, bindings. A collection of diplomas may be indexed not only by the name of the graduate but also by institution, date and signatures. Permission of owners may often be secured to include also in such indexes material locally owned in private libraries; indeed, such an acknowledgement of privately owned material may lead to an eventual gift of it to the library.

As the historical collection is studied, it may be profitable to add films or other photographic reproductions of noteworthy items which the library does not own but which help to complete the collection for use. This is especially true as regards material on local medical history. In addition to titles actually added in photoduplication, a card file may show where in the community other outstanding works on local history may be consulted.

Publicity

In the development of a historical collection in the medical school library, it is often true that the supply creates the demand. The very fact of the library's owning such material, publicized and supervised by an interested and informed librarian, enhances the use of the material and encourages cultural and historical pursuits by persons or groups, and promotes friendship toward the library.

Exhibits based on such material serve the multiple purpose of disseminating information over a period of time to many people, stimulating interest in historical subjects, encour-

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aging hobbies and honoring donors, anniversaries or other special occasions. The preparation of a successful exhibit, however, is a task requiring the time and thought of staff personnel at a high level. Some knowledge of the techniques of publicity are required in the choice and arrangement of material for best results. The value of pictures in exhibits cannot be overestimated and the use of color in mounts and in pictures adds appreciably to interest. Above all, labels and explanations should be not only plentiful but informative and concise. Showing an open book means little without explanation as to why it is shown and why this particular article or book is important. The advice and aid of the medical school artist may be invoked and are invaluable in the arrangement of materials to attain best results. And finally, there should be suitable publicity for the exhibit through posters and notices in the press or elsewhere.

The medical librarian of imagination and purpose can foster cultural and historical interests among both students and faculty through the use of whatever materials his library may possess. Historical societies within the school are especially useful in promoting such study and research, and librarians are among their enthusiastic sponsors. Appreciation of history is not new; it has long been considered the basis for lasting scholarship. It is represented in the quotation from Pericles which says: "The whole earth is the tomb of great men; neither is their name graven only on the stone that covers their clay, but abideth everywhere without visible symbol, wrought in the stuff of other men's lives."

Medical librarians today realize that the library's opportunity and function extend far beyond the administration of reserve books and collateral study

assignments. Reading habits moulded during the formative years of medical school may continue throughout life. It is the high privilege of the librarian to nurture and aid in the development of literary pursuits which will make for a broader field of interests and a more satisfying life for the busy physician.

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The Medical Library and Graduate Medical Education

THOMAS E. KEYS

THE CONCERN in this discussion is with the library as it affects the graduate student of medicine. In the United States especially there is a tendency, and a desirable one, I believe, for graduate training to be informal. To be sure, there are lectures and other required activities but a large part of the time the graduate student is left to his own devices. As Bishop Spalding¹ said: "Where there is question of education, in the true and large sense, the school is but an incident. The history of what man has become and achieved is only in a minor way the history of his scholastic discipline. Heredity, environment and work have made him what he is, and is capable of becoming, far more than the drill of the classroom."

Thus, the graduate student of medicine will find, in the medical library, an important part of the means to his continuing education. He must be acquainted with the recent advances in medicine. To learn of advances made in places other than where he is working, he must seek information in the current periodical^{*} and monographic printed matter of medicine. To achieve cultural understanding of medicine requires historical knowledge of its growth and development.

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This can be acquired only by reading histories of medicine, medical biographies and classic descriptions of diseases. And besides cultural, important practical values are to be obtained from the reading of medical history. As Sir Winston Churchill³ aptly remarked in addressing the Royal College of Physicians: "The longer you can look back the further you can look forward."

A good historical background in medicine should give its possessor knowledge not only of what has been accomplished in medicine but also of what remains to be done.

One of the important aspects of research done by a graduate student of medicine may be the preparation of a thesis or of a paper for reading or publication. The purpose of this may be merely to provide an exercise in reporting, in which case the paper should not be published, or, possibly, to add to medical knowledge. At some time before the report is written, the author will have to review previous reports on his subject, to

*Dr. Krause² cautions the reader of the periodical printed matter: "Much of what is in a journal is crude and unsound. Only too often many of us remain under the influence of the last article we have read as a woman under the sway of the latest fashion. There is a difference between seasoned and unseasoned knowledge. So, it is well to have both kinds available."

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gether with the chief historical facts. Here, use of the library is essential, first in "digging out" the references to previous reports, with the use of library tools, and then in finding the actual contributions. Besides, one who reads original descriptions, written by masters who have made important discoveries, never forgets his experience.

Librarian's Role

The medical librarian has an important role, therefore, in graduate medical education. He must have an understanding of medicine, including its vocabulary, knowledge of the basic sciences and library "know how" in finding answers to his readers' questions. Another task of the librarian is to teach the graduate student how to find what he needs. This means not only instruction in use of the medical indexes, the library catalog and the library's special indexing files, but ability to give the graduate student an overall picture of the importance of the printed word in the practice of medicine.

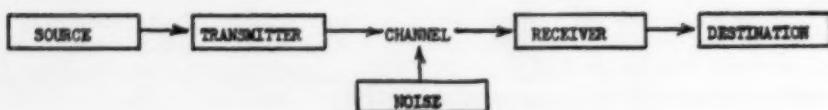
In the past 50 years there have been more significant contributions to man's understanding of disease than in the last millennium. An ever-increasing number of physicians, medical scientists and technical workers have contributed a vast amount of material to medical journals, textbooks, monographs, technical reports, theses and systems. One result is that libraries have received an enormous, cluttered and confused mass of medical printed matter. Probably way out of proportion to the thousands of advances that are taking place are the millions of words that are used to describe these advances.

To add to this confusion is the fact

that only a small proportion of this material is indexed. A timely presentation which includes both the historical and practical aspects of this subject is contained in Estelle Brodman's⁴ doctoral thesis. She concludes: "Indeed it might be said that medical literature and the indexes to it have engaged in a neverending game of leapfrog; each time medical bibliography has seemed to solve the problem of making available the information in the literature, that literature has grown in size or complexity or has developed new forms, which has again required new methods for its listing. Unfortunately, we have not yet devised a system which will make the total literature published today available to those who need it; at the same time the earlier systems have not been able to absorb today's literature."

Even the medical journals with which most of us who work in medicine are familiar are not indexed "properly" and one of the most reliable of indexes is presently at least two years behind the times. That medical indexes are woefully inadequate is partly the responsibility of the medical librarian. It is also partly because of apathy on the part of the scientist, the medical educator, organized medicine and the medical philanthropic organizations which one might think would be sensitive to the need of indexes in the art and science of medicine. As Larkey⁵ has stated: "If we are willing to spend millions for research, we must think the research is worth doing; if it is worth doing, then the results are worth publishing. One would then think it would be worthwhile to be able to find out what had been published. But let us look at the picture in science as a whole. It has been estimated that about 1,000,000 useful

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A SIMPLIFIED DIAGRAM of human communication. (From *Psycholinguistics: A Survey of Theory and Research Problems. Report of the 1953 Summer Seminar Sponsored by the Committee on Linguistics and Psychology of the Social Science Research Council. J. Abnorm. & Social Psychol.* 49 [suppl.]: 1-7 [Oct.] 1954. Reproduced with permission of the Trustees of Indiana University through the Indiana University Publications in Anthropology and Languages.)

scientific articles are published yearly in some 50,000 scientific journals, and yet about one half of these are never indexed or abstracted anywhere. . . . Furthermore, this estimate does not take into account what is lost through inadequate coverage of indexing, either due to the limited scope of indexing or due to the inherent difficulties within the index."

Pending the perfection of medical indexing, the librarian is depending on special indexes, bibliographies and the abstract journals. A more up-to-date method is the systematic inspection of current periodicals and the preparation of a "continuous" bibliography on special subjects as requested. Few libraries can afford this service and many that furnish it charge their patrons for it.

Communication Difficulties

Another difficulty common to librarian and student alike is the general lack of understanding brought about by difficulties in the oral and written communication of ideas. Expressed in psycholinguistics,⁶ human communication is chiefly a social affair requiring at least two communicating units, a source unit (speaker) and a destination unit (hearer). The chances for error in communication, it would seem, judging from the

simplified diagram (figure), are enormous. According to Sunderlin,⁷ moreover, the mechanism of transmission of nerve impulses along the optic nerve to the appropriate center of the brain is not known. If this and other mechanisms were understood, perhaps ideas could be communicated better by some process other than reading: * The barrier to understanding consequent on the lack of ability of medical authors to write clearly has been attested by so many that no single authority need be cited here. This is not to belittle the work of accomplished medical authors such as Sir William Osler who by his beautiful clear prose made the dullest medical subject easy reading and easily understood. Certain modern authors also possess a gift of medical writing which has been manifested in many textbooks and medical periodicals.

*As emphasized by Jones,⁸ the answer may lie in the use of visual media, especially teaching exhibits: "Within its limitations of time and space, it (the modern teaching exhibit) is probably the best device which man has invented to communicate facts and ideas. This is because the exhibit at its best combines the advantages of co-ordinated visual media and language into a specific technique, which has a higher teaching potential than any other known."

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A further barrier to communication is the careless reader who either lacks ability to understand the author's message or jumps, by rapid reading, to faulty conclusions. Finally must be mentioned the handicap to the interpretive function of libraries which exists in the lack of understanding of foreign languages by librarians, graduate students and members of the medical faculty. This last deserves separate treatment.

Other Languages

While it is generally conceded that, today, most scientific progress is recorded in English, the important coeval contributions in other modern languages must not be overlooked. Nor in reviewing past accomplishments should the classic contributions be forgotten, some of them in Latin and some in modern languages. Yet the reader whose language is other than English is perplexed because, with few exceptions, almost all references found in American medical articles are to American and other English-language journals. The reason is not that Americans wish to offend their foreign colleagues or neglect their work; it is only that they do not understand articles in other languages than their own.

Two of the aids to graduate education developed at the Mayo Clinic library, and probably at other libraries, are bibliography cards and abstract sheets. The graduate student is encouraged early to keep his own bibliography on 4 x 6 cards and his own abstracts of the printed matter on 8 x 11 sheets. Once the habit of doing these things has become ingrained, the effort required to keep reasonably up to date in medical

reading is brought within the range of human capacities.

The cultural aspect of life which the general library can nurture remains to be considered. Much that is of value to the physician and his patients can be gained from the perusal of nonmedical works. Where can one get more illuminating insights on the behavior of human beings under stress than by reading the plays of Ibsen or the works of Poe? Where can one find a better description of the plague than is found in Boccaccio, and where can one find a better summary of the qualities necessary for successful practice in the era of Arabian medicine than in "A Thousand and One Nights?"

Familiarity with great literature, also, guards the reader against the dull routine characteristic, probably, of all professions. To combat boredom and to refresh and fortify the professional men, Osgood⁹ suggests lifelong reading of poetry, not one poem but the complete works of a poet and all the relative literature.

Briefly, mention has been made of some of the ways in which the library is used in graduate medical education and of some of the shortcomings in its use. The librarian and the members of his staff can do much toward proper interpretation of the library's resources if they possess a lively interest in the books and their users. They can see to it that the library is open during the time that the busy student and teacher can visit it. This means that they will open the library a reasonable number of evenings a week and on Saturday afternoons and Sundays. They can admit graduate students and teachers to the library's stacks—this saves time and one book leads to another. They can arrange the journals and books so that the resources of the library are

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easily accessible. They can separate the live from the dead material so that pertinent materials are readily available. They can supply indexes to the library's special collections. They can compile bibliographies of special subjects. They can prepare exhibits that will awaken the student's interest in special library resources. They can encourage an antiquarian interest by pointing out desirable inexpensive items in the readers' fields to be found in dealers' catalogs. They can take students on "book walks," pointing out the worthwhile books, ancient and modern. Above all they can maintain a helpful attitude toward every reader and, in their willingness to help, they can have the supreme satisfaction of contributing, in no small measure, to the cure of the sick.

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STAFF CHANGES IN CENTRAL OFFICE

As of September 1, 1955 John M. Stalnaker will give up his position as director of studies of the Association of American Medical Colleges to assume the presidency of a newly created organization to be known as the National Merit Scholarship Corporation with headquarters in Evanston, Ill. Mr. Stalnaker has served the Association with distinction as its first director of studies and will leave many friends. Going with Mr. Stalnaker to the new corporation are Edward C. Smith and Helen S. Morford.

Dr. Ross Dyckman, assistant director of studies, will leave the Association this Fall to accept a position as associate professor of physiological psychology in the Department of Psychiatry at the University of Arkansas School of Medicine. In his two terms of service for the Association Dr. Dyckman has contributed a number of important papers and has been largely responsible for the much used booklet "Admission Requirements of American Medical Colleges."

Replacements made by the Association include the following: Dr. Helen Gee as director of research, Jean McJoynt as consultant on IBM operations, and Helen McBride, administrative assistant in the study section with special responsibilities for the Teaching Institutes.

The Yale Medical Library's Role in Education

FREDERICK G. KILGOUR

THE YALE MEDICAL LIBRARY furnishes information, largely as recorded in books and periodicals, for use in connection with five major activities of the Yale University School of Medicine, the Institute of Human Relations, and related schools and departments of Yale University: (1) education, (2) research, (3) treatment of patients, (4) prevention of disease and (5) teaching and research in the history of medicine. This paper, however, is concerned only with the library's activities which are related to the educational program of the school of medicine, and even within this restriction, it will not deal with postgraduate education.

The library is one of the largest associated with a medical school; it has 275,000 volumes including 110,000 European medical theses, but not including reprints. Its building is spacious and commodious. But size and the building are not the criteria for the effectiveness of a medical school library. Within the limitations of functions being considered in this paper, a library one-fifth the size of Yale's could do a creditable job—providing it had a good staff. The Yale Medical library has no major characteristics of methods or collections that distinguish it from other medical school libraries. If it differs in any way, it is in its point of view, which derives directly from the edu-

cational program of the school of medicine.

Dr. S. C. Harvey¹ and Dr. Vernon W. Lippard² have published papers setting forth the underlying philosophy and distinguishing methods of the Yale program. The objective of the school is to teach the student how to become a physician—not how to be a physician—on the theory that he will spend the rest of his life adding to his medical knowledge. A recent faculty committee has restated the program's basic philosophy:

"Fundamental to this program is the concept that the medical student is a mature individual, is strongly motivated to learn and requires guidance and stimulation rather than compulsion or competition for relative standing in his group. Equally basic is the concept that if the student is given unusual privileges, he must assume more than usual responsibility for his education."³

Over the course of 30 years the application of these ideas in teaching has, as Dr. Lippard pointed out, evolved four distinguishing practices in instruction. There is an emphasis on elective courses, no required course examinations, no fixed course requirements for qualified students, and a dissertation based on original research is required for a degree. The teaching is not didactic, rather it emphasizes the student's finding out for himself, and the relations of research to the practice of medicine. Among other things that are not done, in-

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structors do not give assigned readings in the usual sense of that term, nor do they require specific textbooks.

Despite Sir William Osler's oft-quoted statement, the heart of the school of medicine is not the library. The real heart of the school is its men and women—its instructors and students—and its major educational function is to impart knowledge imaginatively. Writing on this point in connection with a university as a whole, Alfred North Whitehead has said: "A university which fails in this respect has no reason for existence. This atmosphere of excitement, arising from imaginative consideration, transforms knowledge. A fact is no longer a bare fact: it is invested with all its possibilities. . . . Imagination is not to be divorced from the facts: it is a way of illuminating the facts. It works by eliciting the general principles which apply to the facts, as they exist, and then by an intellectual survey of alternative possibilities which are consistent with those principles."⁴

The library, then, is concerned with the "bare facts," to use Whitehead's phrase, but it does not impart them imaginatively. This is the task of the instructors. Nor is the library equivalent to a teaching laboratory. Rather, the library's books are analogous to the laboratory's experimental animals; neither can teach a student, but both contain information. Nevertheless, the facts, the accumulated knowledge, are as necessary to the educational process as imagination. Education contains both; if both are not present, education is absent.

A teaching laboratory does some training as well as teaching, the training consisting largely in the use of instruments and apparatus. Although the library does not teach, it, too, does some training or at least offers an opportunity for training to the

students. The training, of course, is in the use of medical literature. The staff guides students in their use of the library, and those who use it regularly become skillful in obtaining the knowledge they need.

It is the library's belief that students acquire such training far better in the course of locating information directly related to the educational program, than by attending formal lectures on the use of the library and performing exercises in locating information of no immediate use to them. The students apparently think so too. As the result of a series of misunderstandings, a course on "The Use of the Library" was listed in the catalogue several years ago. Only one individual signed up for the course, which was fortunate for the library since no course had been prepared. And significantly, the student was a junior in Yale College—not a medical student!

It should be made clear that the library does not train students but guides them in what is really their self-training in finding information. They become skillful after repeated use of the library's resources, but neither library nor the faculty compel them to make use of the library. It is gratifying, however, that, by the end of their medical school careers, many students are obviously finding what they need without a consciously ordered use of card catalogues, periodical indexes and bibliographies. They have become skilled in the sense that Professor L. J. Henderson employed the term when he often said: "A skilled man doesn't know what he's doing."

"Facts"

It has already been stated that the library is essentially concerned with "facts," and that the facts are a

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necessary part of the educational process. But their significance for education should be elucidated before the library's procedures for selecting and maintaining a collection of facts is presented. During the past decade or so, several students of evolution, notably Julian Huxley, G. G. Simpson, E. W. Sinnott and C. H. Waddington, have evolved a concept of human evolution of great purport for educational libraries. The new concept recognizes that man evolves not only biologically but also culturally and that the typically human aspect of human evolution is transmitted by nonbiological means. Man's "psychosocial evolution," as Huxley has termed it, has made him the most adaptable of organisms. The principal way in which human beings now evolve is by the acquisition, cumulation and transmission of experience by language and picture. In the 20th century the library is a major factor in human evolution in that it is one of the principal human activities for transmitting knowledge to the younger generation. In these broad terms, education is the process of developing the art of the utilization of knowledge, and it follows that the principal objective of an educational library is to make available knowledge and ideas of the arts, ethics, religious beliefs and sciences useful for the general cultural advance. For a medical student, useful knowledge is that knowledge which will enable him to evolve new knowledge and to increase the effectiveness of the prevention and cure of disease.

The library's principal aim, therefore, is to make available to the student knowledge that is useful to him. But the library does not assume the responsibility of being the only provider of books and periodicals; the students start their own libraries, and many of them purchase books and

are subscribers to several periodicals.

For the library, the first step in having the necessary information available is to acquire it. Since the library acquires about 1,200 current periodicals, the question of the purchase of new titles does not often arise. The purchase of new books, however, is a daily event. The library depends almost entirely on faculty advice in the acquisition of new books, employing a procedure which appears to be satisfactory to all concerned. A publisher's advertisement of a book is sent to a faculty member and attached to it is a three-by-five inch slip of the brightest red on which is printed the following brief memorandum from the librarian:

"Would you please return this slip and the enclosures to me after having indicated on the enclosures whether or not the library should acquire the material described. Thank you."

Faculty response to this request is immediate and, for all practical purposes, 100 per cent. Very little faculty time is consumed by this procedure, and it is the library which always takes the initiative. The result is that the library's acquisitions are timely and are guided by the best possible recommendations.

On a very few occasions instructors have requested the library to discard a recent book because it was misleading for a student. It was, in short, a fake book, and the library has not hesitated to get rid of it. Fortunately, this incident has occurred only in connection with books that had been gifts.

The fact that books are discarded on rare occasions because they are inaccurate or misleading points up the observation that eventually most books become useless in an educational program although they may acquire great historical value. For educational purposes, it is important that the collection be kept at a high

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concentration of utility and that it not be diluted with superceded information. The Yale Medical library does not subscribe to the fallacy that the latest book is the best, but the fact remains that, by and large, books of recent imprint date are more useful than older works. A 1930 monograph on the treatment of infectious diseases is of very little value to a medical student today. Medicine is a dynamic enterprise.

Book Arrangement

Fortunately, for many years the Yale Medical library has been arranging its books on the shelves in a manner that makes possible the continuing maintenance of a collection of high utility. Most libraries arrange books within a classification category by author; at Yale (and this is true for Yale University library science collections in general) they are arranged by imprint date. At the present time, the library's books from 1936 to date are in the reading room while earlier imprints are in the stacks. This shelf arrangement greatly increases the availability of the most useful books. Moreover, there are no closed stacks. Nineteenth and 20th century imprints, including 60,000 periodical volumes, are on open shelves. And it has become apparent that the browsing, which often accompanies the search for facts, is a worthwhile element of an educational experience.

During recent years several changes in the library's procedures have been made in the hope of increasing the availability of information. An analysis of the use of periodicals revealed that "current use" continues for about five years with the second year after publication being the time of heaviest use. This year of heaviest use is also the time when the journal would

normally be at the bindery. The analysis showed that the 40 most heavily used periodicals supplied nearly half the total use made of journals. As a result of these findings duplicate subscriptions were entered for the most heavily used 40, for some of which there were already partially complete duplicate sets received by gift.

The first and complete copy was reserved for use in the building with the second set being a circulating copy. When a current volume is complete, it is the second set that is bound with the unbound issues of the first set still being retained in the library. When the bindery returns the newly bound volume, the designation of sets is switched; the bound volume is made a part of the noncirculating set and the unbound issues are then allowed to circulate. The second, circulating set is never bound but is shelved in compact storage boxes. In this arrangement, a borrower taking out one issue does not make the other three, five, or eleven issues of the volume unavailable. Since an investigation of unbound issues and bound volumes that were neither on the shelf nor recorded in the charge file produced a low percentage consistent with general library experience, the binding of all periodicals has been delayed until the peak of heavy use during the second year after publication is past.

One of the relatively unique features of the Yale Medical library is its historical library, operating under the leadership and guidance of Dr. John F. Fulton, Sterling professor of the history of medicine. Dr. Fulton more than any other one man has been the guiding light in building up the collection and in stimulating student interest and activity in the history of medicine. Each year there are students who do research and write

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their theses on some historical topic.

The library also has a film collection of perhaps 50,000 feet of edited film and a projection room with a capacity of about 40 people. Co-operating with Yale's Audio-Visual Center, the library makes most of the arrangements for projections at the school as well as for reviewing new films. There has been an increasing use of the room since its establishment, and it has been gratifying that on several occasions the students have organized series of showings. The library, therefore, assists in making information available in forms other than books and periodicals.

With the Yale emphasis on the research attitude and the use of scientific methods in approaching and solving problems in the practice of medicine, the student learns to use a library much as a scientist does. He attempts to find out two things: that something has or has not been done and that it did or didn't work. During their first two years in the school, students use monographic materials as heavily as periodicals, but during their last two years, they use periodicals very extensively. They are learning the art of utilizing knowledge; they are being educated.

Conclusion

In conclusion, it must be emphasized again that there are no major characteristics of procedure that distinguish the Yale Medical library from other medical school libraries with the possible exception of the date arrangement of books within a given subject. The library's major function in the Yale University School of Medicine's educational program is to make available knowledge to students who will later be the physicians carrying on the dynamic evolution of medicine. The library is not merely a depository of knowledge; it is an instrument of education. And as Whitehead has said, "Knowledge doesn't keep any better than fish . . ." It must have a ". . . freshness of immediate importance."⁵

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The Improvement of Medical Library Bibliographic Service

EILEEN R. CUNNINGHAM

THE RECENT PHENOMENAL growth of medical literature and of that of allied fields makes it imperative to bring to the attention of the medical profession the present status of reference services and the importance of studying better methods for dealing with this vast literature. Generally speaking, these reference services, which function as the medium for bringing the reader in contact with the literature, can be divided into definite components, all of which are necessary in order to obtain an efficient working unit. They are: 1. the presence of trained reference librarians, "documentalists" and other members of the staff of a modern reference service; 2. the provision of bibliographic sources such as indexing and abstracting services; 3. provision of methods for duplication of material and methods for mechanical literature search and transmission and 4. the responsibility of the medical profession to see that reference services are provided and are constantly improved, especially those outlined in No. 2.

"Librarian and Documentalist"

The Medical Library Association has been a pioneer in helping to con-

vince library schools of the need for special types of education for persons working in medical libraries, (Marshall,²² Doe,¹¹) and it has been supported in its effort by the studies of the Sub-Committee on Special Library Education, a division of the Council of National Library Associations' Joint Committee on Library Education.²³ The standards established by the Medical Library Association, its program of voluntary certification and its encouragement and promotion of library schools willing to establish courses which meet the association's requirements have all had a far reaching effect. The association's scholarship program is also helping to attract to the profession alert young people who are receiving better subject training.

It is not possible to take up the question here of the relation of the special, e.g., medical or law, reference librarian to the "documentalist" or to outline their respective functions. The question of the present status of documentation is ably discussed by Jackson¹⁷ and by Shera.²⁴ However, the emergencies created by World War II and the entrance of government agencies into research projects on a large scale have led to the employment of many highly trained specialists for literature searching in specific fields; this type of specialist is also extensively employed by industrial firms. With the introduction of me-

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chanical devices for literature search and the extensive use of modern methods of duplication, increasing numbers of specialists familiar with these methods have been added to the reference staff of large libraries.

Major Bibliographic Sources

Medicine has good reason to be proud of the excellent indexes and bibliographies which were developed early, and the history of medical bibliography is a fascinating story. Brodman,⁵ Thornton²⁹ and the Medical Library Association Handbook.²⁸ For a number of years the *Quarterly Cumulative Index Medicus*, and the *Index Catalogue of the Library of the Surgeon General's Office* met, for the greater part, the bibliographic needs of the medical profession. There was no comprehensive medical abstracting service in the English language, but the German publications of this type were very useful. There were, and still are, many abstracting services in special subjects and many of the highly specialized journals include abstract sections.

Excerpta Medica, a very comprehensive abstracting service in English, commenced publication in 1947. Its 17 sections are extremely helpful in making the foreign literature available to English-speaking readers on a scale hitherto not possible, and the early volumes include literature published during the war.

It is no longer possible for anyone to keep abreast of world literature in even a fairly limited field by examining and reading the journals published. Approximately 4,000 titles appear in the recently published directory, *World Medical Periodicals*, yet this list does not include many related subject fields with which the person doing medical research must be familiar. Probably the medical

scientist of today could find material of interest scattered through some five or six thousand periodicals. Failure to have information concerning the investigations of others means that the millions of dollars a year invested in research are not used with maximum efficiency. Obviously, busy scientists must rely on bibliographic aids, indexes, abstracting services and review journals in order to become familiar with the literature and to permit concentration on selective reading of original work. Without good bibliographic guides, the medical reference librarian and "documentalist" can only supply information at the expense of much loss of time and duplication of effort. Paradoxically, however, the provision of such reference works and their improvement is, to a large extent, out of the hands of the medical librarian, as their production, scope, format and financial support remain the responsibility of the medical profession.

Strangely enough, the medical profession as a whole has remained apathetic to the situation. Vannevar Bush in his "Science, the Endless Frontier"⁷ and again in a recent article⁸ voiced the warning that a new approach to bibliographic problems adequate to the literature of an atomic age must be evolved and that this might require abandonment of many methods now in use, as well as certain bibliographic prejudices to which we cling. More recently Vischer has drawn our attention to some of these problems in his article, the "Interdependence of Knowledge and Information."³⁴

Koest and Franck,¹⁸ writing on the need for collaboration between the laboratory and library, point out that the most important function of the librarian in special subject fields is not administration but in placing accumulated knowledge of the litera-

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ture and experience in literature search at the disposal of the reader. This is necessary today lest they, becoming discouraged because of the complicated form of bibliographic guides and the time consumed in their use, stop without obtaining the material sought.

Certainly reference aid is an important function of medical library service, but this service is costing the profession a tremendous amount of money per year; therefore, it should be of great concern that literature search has become a much slower and more complicated and difficult process. The scientists must join in any attempt to improve the situation, for without the knowledge, interest and prestige of the medical profession behind them, it is useless for medical librarians to approach editors and publishers with suggestions for better bibliographic services which, after all, are primarily to aid the profession.

Since World War II, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Health Organization (WHO), becoming concerned with the problems of modern bibliography, inaugurated jointly several conferences on an international scale. The résumés of the meetings of the Committee on Medical and Biological Abstracting and Indexing^{21, 22} and of the International Conference on Science Abstracting^{23, 24}, the UNESCO Conference on the Improvement of Bibliographic Services²⁵ and the Conference on Scientific Information sponsored by the Royal Society²⁶ record the conclusions reached. These conclusions and the recognition by the National Science Foundation that a study of the need for improvement in interchange of scientific information constitutes an important part of the foundation's responsibilities, represent important milestones on the

so-called bibliographic road.

Each conference recommended closer collaboration than has been customary between the editors, publishers, scientists and librarians in order to solve problems connected with access to current literature. To obtain better collaboration, the committees on physics and chemical abstracting, once sponsored by UNESCO, are now affiliated with their respective scientific unions, and the Committee on Medical and Biological Abstracting and Indexing was taken over by the Council of International Organizations of Medical Sciences. There is a danger, however, that the scientists, preoccupied with other interests, will fail to make progress unless they ally themselves with librarians to share the detailed work.

All of the conferences stressed the importance of establishing strong national committees to study the problems concerned with adequate dissemination of information in the various sciences. In this country, as far as medicine is concerned, these recommendations have gone unheeded largely, I believe, because the medical profession fails to realize how urgently these problems need attention.

Reference Service of the Future

What a challenge lies in these few words, for its improvement and future status depend on us! How much such services will differ from present services we do not know, but it is obvious that certain changes will be needed, and to achieve them our minds should be free to discard much that has come to be regarded as established and essential. However, it is equally important to be careful that in our zeal for improvement we do not discard that which

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is essential, even under the changed conditions existent today. Resisting a temptation to "crystal gaze," let us consider those problems where the attention and aid of the medical profession might prove most valuable at the present time.

1. *Problems of Space.*

- a. Current material. Let us assume that in the future, as in the past, books and printed periodicals will still remain the preferred medium for the exchange of current information. If this surmise is correct, then this type of material, for a considerable period after publication, should remain in as close proximity to the reading rooms of our libraries as possible, and these rooms should be designed to afford the reader as rapid and comfortable use of it as possible.
- b. Older material. Many libraries are handicapped because such materials occupy so much of the space needed for current material. With the cost of building as high as it is at present, it is entirely understandable that administrative officials hesitate to invest larger and larger sums in the housing of less and less used material. Another important factor is also entering into the picture—a tremendous number of medical journals printed from 1870 to the present time utilized paper of such poor quality that the ultimate disintegration of the volumes is an absolute certainty. Many such works can no longer be rebound or the pages mended. Even the necessary turning of pages in order to read a given article causes them to crumble and fall apart in our hands.^{20, 21}

It is important to preserve the content of many such journals because they give a picture of the medical life and times of the countries involved; e.g., the older portions of *The British Medical Journal*, the *Lancet*, the *Journal of the American Medical Association*, and the German *Wochenschriften*. The cost of reprinting and rebinding, in addition to the cost of providing adequate space, would seem impractical. With the advent of new methods of duplication, an alternative choice is at hand, for such material can be made available on microprint (100 or more pages of an average volume to each unit sheet) or on microcards (each card averaging 35 to 50 printed pages). Books and periodicals transcribed in such form can then be stored compactly with tremendous saving of space.^{13, 14} An example of an important medical work now available in microprint is the *Index Catalogue of the Library of the Surgeon General's Office*. Our libraries should begin to make budget provision for purchase of microprint editions. All types of microprint and film require the use of reading machines but good machines are already on the market, which should prove adequate for the increasingly less frequent use of older material. The time has now come when medical scientists and librarians should decide which format is best suited for the type of material to be copied, and what titles need immediate reproduction. If libraries pool their orders, the process of reproduction is much

cheaper per title and much money could be saved. Film, so helpful for current research needs, does not seem the ideal medium for long-term preservation of material and it is much more difficult to use, catalog and handle.

c. Unpublished material and government reports. Much information that should be available, although only needed by a few persons for very particular purposes, is now lost in the mass of material that is not recorded in bibliographic sources. The need for the establishment of medical documentation centers on a regional or national basis requires study. Material, both published and unpublished, deposited there could be coded for mechanical search and stored.²⁵ Mechanical methods could be used economically in this type of center when they might not be practical for the average library. These centers could furnish the material on loan, by duplication, or by mechanical transmission¹ to libraries and individuals, but would be quite different in function and arrangement from the ordinary medical libraries, which they would supplement and to which they could be connected by teletype service.

d. Methods of duplication and transmission of printed material. The provision in medical libraries of simple and cheap methods of duplication for loan purposes has not been sufficiently explored.¹⁶ In this country we have relied chiefly on expensive photocopying methods which require fairly elaborate equipment and solutions which deteriorate rapidly. The

"Contoura" method of reproduction is now a one-step process, but inexpensive methods are needed such as those provided by the Rétocée machine, developed in The Netherlands, or similar machines now available in Europe.²³ These machines make, by dry process, several tissue copies at one time which can be read without magnification and which are convenient for mailing by air. Such a process is used by the International Children's Centre in Paris, which sends information to scientists in many countries. Scott Adams, writing on facsimile reproduction, believes that costs can be reduced to the point where methods such as Ultrafax will ultimately prove to be as cheap as interlibrary loans. However, loans will be needed by individuals and small institutions where elaborate receiving equipment is not available; therefore, the cheap simple methods will probably always be important.

2. *Language—Key and Barrier to Interchange of Information.*

At present we are actually worse off than in the days when every educated person had a medium for the exchange of thought by the use of Latin. Several attempts have been made to interest scientists in the production of an international scientific language and some interesting experiments on these lines were carried out by Science Service in Washington, D. C. The language, "Interlingua," could be used relatively easily by anyone familiar with any one or two of the languages of the Western world. It could not be adapted to Oriental languages because of the lack of a common de-

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nominator between them. Admitting that the rapid adoption of such a language is still far off at present, then it is important that young scientists should receive good training in modern languages. In the period following the first World War, the progressive lack of ability of young scientists to cope with the foreign literature became of concern. The medical profession should, therefore:

- a. Use its influence with educators in charge of elementary schools and of colleges to urge the requirement of at least one modern language as an essential for entrance to college. The need for additional language training should also be pointed out to all those expecting to specialize in science.
- b. Combat the increasingly prevalent idea that only familiarity with the work of a few countries, or even a single country, is all that is essential as a background for research.
3. *Improvement of Reference Sources and Bibliographies.*

With the advent of World War II, there was a serious breakdown in all medical bibliographic service. The mistake was made of permitting the most relied-on medical index, the *Quarterly Cumulative Index Medicus*, to become terribly retarded and even at present, it has never been able to resume service on a really "current" basis. Without the *Current List of Medical Literature*, furnished by the Armed Forces Medical Library, the scientific literature of a two-year period (or until the appearance of the *Quarterly Cumulative Index Medicus*) would be completely unavailable. In medicine, such a delay is unthinkable!

Many physicians and scientists are aware of, and annoyed by, the fact that the *Quarterly Cumulative*

Index Medicus appears two years late. They lament that they find the *Current List of Medical Literature* difficult to use, but they have not seemed to realize: (a) that the problems involved are of intimate concern to them and (b) that they should be investigated with a firm determination to find out what is the cause of the barrier.

Many have been disturbed and unhappy because it was found necessary to stop the publication of the *Index Catalogue of the Library of the Surgeon General's Office*, but how many have read Colonel Rogers' report²² stating why this was necessary?

Experimental studies were undertaken at the Johns Hopkins University Medical library in connection with the production of the *Current List of Medical Literature*.²³ These studies yielded some interesting information on the application of machines to bibliographic processes and the use of IBM cards for coding subjects and preparing indexes. A very challenging report concerning the *Current List of Medical Literature* appears in a recent issue of the *Armed Forces Medical Library News*.¹⁰

- a. Indexing and abstracting services. A careful analysis, similar to those made recently for abstracting services in physics¹⁴ and the biological sciences, should be carried out for the medical sciences. The most important bibliographies have international as well as national usage; therefore, accurate information, on an extensive scale, should be obtained regarding what users of such services in this and other countries really want. Dunkin¹⁵ says, "Bibliography is, indeed, . . . receptor-initiated. . . . Then

why not study the receptor? What does he want? How does he want it packaged?" The Johns Hopkins studies referred to above²² have not provided adequate information on this point.

A study of existing services important to medicine should cover the following points: economy, wide coverage of literature, elimination of unnecessary overlapping, rapidity of publication and transportation and use of a format planned for ease of consultation and for utilization in permanent form by libraries as well as for current use by individuals.

Editors and publishers of indexing and abstracting services are trying to produce adequate tools. They must be run on a nonprofit basis in order to bring them within the financial reach of scientists, but how many who benefit from them, have really tried to learn more of the problems and difficulties of publication faced by such services today?

- b. A medical union list of the periodicals available in the medical libraries of the United States. The medical journals in the largest medical libraries were included in the monumental *Union List of Serials*, the second edition of which appeared in 1943 and in the supplement volumes which cover the period through 1941-1949. With ever increasing numbers of titles and increasing numbers of libraries, the cost of a third edition has been found prohibitive and plans for its publication had to be abandoned. A list limited to medical libraries would permit

the inclusion of the holdings of many more than was possible in the general list. Moreover, the holdings of the medical libraries of many states were not included in that list, leaving a considerable lacuna in our information regarding the location of material on a regional basis. Such a list could also be furnished at lower cost than the big general list. Subsidy would be required for publication but the information furnished would be important from the standpoint of the mobilization of the resources of this country for research in time of emergency.

- c. Rapidity of transportation of bibliographic materials. Possibility of obtaining air mail postal permits for delivery of bibliographic indexes by air to other countries at reduced rates should be investigated. This would prevent the present necessity for duplicating bibliographic work over and over again because of delay in receipt of information. Subsidy for this purpose might be obtained from some of the international agencies such as WHO, UNESCO or the Pan American Sanitary Bureau, or the use, by mutual agreement, of an international frank.
- d. Use of synopses. The role of the editor of scientific journals could be very important in speeding up the publication of bibliographies if, as a requirement for acceptance for publication, all articles would have to be accompanied by a synopsis which would receive editorial supervision at the same time as the article itself. In final form multiple copies would be

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furnished with the necessary postage so that they could be mailed to the appropriate indexing and abstracting services as soon as the bibliographic entry could be completed by page citation. This would shorten the time between the publication of the article and its appearance in the bibliographies and would help to make their production more economical. A booklet prepared by the Royal Society on the procedure involved is available on request from the Natural Sciences Division of UNESCO, 19 Avenue Kléber, Paris 16, France. The valuable suggestions it contains should be in the hands of every editor, and they should be urged to adopt this procedure for medical journals.

e. Standardization of reference format, abbreviations and the symbols used in scientific articles. Reluctance to adopt standards for bibliographic citation is universal because most reference services and journals cling to their own pet form, a form which may have been evolved long ago and which deviates only in unimportant details from that now recommended for universal use. Failure to accept standard usage means the loss of untold time and money for authors, editors, publishers and producers of bibliographic services. There is also loss of time, and time represents money in modern thinking, for anyone engaged in analyzing, preparing or using the literature. Koest and Franck,¹⁹ in discussing this lamentable lack of uniformity, draw our attention to the fact that scientists often tend to think only in the

form and terms most convenient and familiar to them *currently*. However, in a surprisingly short time, they rely on the reference services of a library to get back to this same material; therefore, it is important to use the form that lends itself most readily to rapid search and accurate citation.

Committees working under the various national and international standardization organizations have spent years working on model standards which could be acceptable with only slight modification, for use in citation, both nationally and internationally. The universal adoption of such standards would in no way curtail the individuality of thought and opinion expressed in an article, but would simplify for everyone, the process of bibliographic citation and the consultation of bibliographies.

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The Armed Forces Medical Library and Medical School Libraries

ESTELLE BRODMAN

IN THE UNITED STATES the approximately 80 medical schools all have libraries, but these libraries differ widely in size of collection, financial support, services rendered and number and caliber of staff. This is to be expected, of course, and is due to such factors as the age of the institution, its geographical position in regard to other libraries, the variation in teaching methods, the administrative control of the medical school (whether by the state or by an endowed institution), and even the presence or absence of an enthusiastic book collector on its staff during its formative period.

Except for a few eastern and mid-western schools, however, most medical school libraries are comparatively small (under 75,000 volumes, with an average of about 30,000 volumes) and are aimed at giving only those services which are intimately connected with a teaching program. This means they are geared to provide textbooks, often in multiple copies, the common English language journals in the preclinical and clinical fields taught at the school, and the standard reference tools. The services center around the undergraduate "reserve book" collection, the circulation desk, and the interlibrary loan department, while reference work is

likely to be concerned with verification of references and search for particular facts.

All of this is as it should be. A medical school library should first and foremost give the services needed by its students and teaching faculty; all other things ought to be scrutinized carefully. To be large just for the sake of largeness is not only an unworthy goal; but, while it might have been feasible in earlier times, is a completely unrealistic one now, when all medical education is suffering from a severe financial drought.

One of the reasons medical school libraries can easily concentrate on satisfying their immediate needs is that they can handle many of their less frequent and more esoteric demands through use of the Armed Forces Medical Library in Washington. Because this library has taken as its responsibility collecting and making medical literature available on a national, and even international, basis, other American medical libraries can conserve their own resources to provide the recurring services needed locally. Briefly, the AFML has considered that it has the duty of collecting, so far as is possible, all medical literature from all times in all languages, of making it available to the entire medical world by publishing catalogs and indexing keys for its use, by loaning either the originals or photocopies of the originals to

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those who cannot obtain the works locally, and of supplementing the reference work of the local institutions from the wider collection and more specialized staff which a national library can muster.

Central Duties

The word "supplement" is the key word in the previous paragraph. The AFML does not feel that it can or should do the basic work of medical school libraries; rather, by a natural division of labor, it expects the school to provide the necessities, which it can do best, to further its local educational needs, while the national library performs the duties which are more economical when performed centrally. It would be hampering, for instance, for a school to have to depend upon the AFML for books and journals used as collateral reading by its students; but by the same token it would be an unnecessary and expensive duplication of effort for each library to index the journals it receives when the *Current List of Medical Literature* can do it once for all libraries.

If this scheme has any validity, it would seem to follow that both medical school libraries and the AFML should examine their collecting policies and their services critically to determine if what they are doing is better done by the other group or if there are areas not covered by either institution. Certain examples come to mind immediately. From the point of view of the schools, would the students and faculty be better served by more copies of fewer titles (both book and journal titles) or are the calls for monographs so persistent a more diffuse collecting policy is warranted? Should "weeding" of the collection be done more frequently and more ruthlessly than in the past, with

the knowledge that copies can be obtained from the AFML if needed occasionally? Is the collection of indexes, abstract tools, bibliographies and other reference works good enough to act as guides to the total medical literature, whether or not the items are actually in the school library? Is the library staff sufficiently aware of these tools so it can make the best use of them itself and so it can show the students and faculty members how to handle them? Would it be cheaper in the long run for the library to purchase routinely the AFML Catalog cards and the Library of Congress proof sheets and card sets for new books, rather than to do the work of cataloging each title itself? Would such a plan make it possible for the library staff to furnish services which can only be done by such a group, but which have not been done heretofore because the staff has been spending extra time on cataloging? Might not an expanded, personalized literature reporting service to faculty members, or more extensive reference work, or aid in writing papers, or better library exhibits be possible?

What To Do

On the other hand, what can the AFML do to add to the school libraries' services? Can it work out a more convenient and more extensive index to medical periodicals? Can it devise more effective means to insure wider distribution of its *Annual Catalog* so that this great bibliographic tool is available in a larger number of small medical libraries? Can it work out some cooperative scheme with other libraries around the nation for regional central libraries, in which AFML duplicates are sent to geographically scattered medical collections to strengthen their holdings of

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foreign and less-used research titles? Should it attempt to increase the number of the occasional comprehensive bibliographies it now publishes? Is the provision of abstracts or translations of foreign works a responsibility of the national medical library? Should it take an active part in the recruitment and training of specialized librarians?

These are some of the areas for investigation and joint action by medical schools and the Armed Forces Medical Library. Each group serves a useful purpose, but here, as in other fields of endeavor, by working cooperatively, a synergistic reaction could be brought about. Some progress has already been made toward this goal, but more needs to be done.

The Armed Forces Medical Library and Medical Education

FRANK B. ROGERS

WE HAVE THE testimony of a great physician that acquainting students with medical literature "to the majority and in the long run will be infinitely more useful than an experience with smoked paper and Ludwig's drum."* Acting either on this theory or at the prodding of accrediting committees, educational institutions have established medical libraries which have the dual function of providing students with references needed in everyday study and furnishing faculty and research groups with needed literary tools. But no matter how generous the school may be in supporting its library, sooner or later the local library will turn for aid to the Armed

Forces Medical Library in Washington, which for over 100 years has served as the national library of the medical sciences. A brief survey of the history, collections, publications and services of this national medical library should therefore be of interest to all medical educators.

History

The library had its beginnings in 1836, when it consisted of little more than a few shelves of books in the office of the Surgeon General. The phenomenal growth of the library may be dated from the close of the Civil War; simultaneously the great John Shaw Billings was named librarian, and a large sum of money remaining from Civil War hospital funds was put at his disposal. When Billings was placed in charge of the library its collections numbered some 1,800 volumes; when he left the li-

*CUSHING, HARVEY. The Doctor and His Books. (Allen Memorial Medical Library, Cleveland, 13 November 1926.) *Consecratio medici and other papers*. Boston, 1928. p. 260-1.

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brary, some 30 years later, the collections included over 100,000 volumes. Billings established a printed subject and author catalog of the Library, the *Index-Catalogue*; and as a private enterprise he inaugurated, in 1879, the *Index Medicus* as a current index of medical periodical publications. As the holdings of the library grew, they were for awhile stored in the old Ford Theatre building, which had become a government warehouse. In 1887 the library moved into its present quarters next to the Smithsonian Institute; at the time, the quarters seemed adequate, but the rapidly expanding collection soon upset all calculations. As early as 1900, pleas for additional shelving were heard. Today, books are piled on floors, on window sills and on desks; the collections have expanded into two temporary buildings across the street, and the older materials are housed in rented quarters in Cleveland, Ohio. It is hoped that a new building, now in the planning stage, will be erected soon, so that the collections may be adequately housed and the staff may have sufficient room in which to work.

Size and Scope

The library is now probably the largest medical library in the world. It contains about 900,000 items (monographs, journal volumes, theses, pamphlets), and provides the Department of Defense and the nation at large with the world literature of medicine. Its long runs of periodicals give it a character possessed by few other scientific libraries; its collections of portraits of medical men and pictures of hospitals is growing daily; and its section of American and foreign government and statistical documents is probably unique. Over 8,000

serial titles are received by purchase, gift and exchange, including about 4,500 journals. Altogether, about 100,000 journal and monographic pieces are acquired yearly, representing literature of medicine, dentistry, pharmacy and allied sciences in all languages and of all times.

The Armed Forces Medical Library takes pride in its collection of contemporary medical literature, and is oriented primarily in the direction of serving the needs of contemporary clinical and research medicine. Nevertheless, the history of medicine has a position of honor in the library's scheme of things. The science of medicine certainly has its humanistic overtones, and interest in the history of the profession is to be cherished. The library possesses some 32,000 volumes of early (pre-19th century) medical literature, strong in incunabula, 18th century works and medical Americana. A reference service is maintained, carried on largely by correspondence, supplemented by microfilming or photo-printing of texts when called for; through these means the extensive riches of the collection are open to scholars everywhere. A descriptive catalog of incunabula, early Western manuscripts and Oriental manuscripts was published in 1950.* For some years the books themselves have undergone, at the hands of an accomplished craftsman and his aides, an extensive and much-needed program of restoration and rebinding, designed to improve materially their physical condition and insure their preservation for future generations. The Library also has an Art Collection, consisting mainly of prints, photographs, posters, caricatures, bookplates and the like. These materials are used by newspapers and

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magazines, by editors, historians, research writers and business firms. The greater part of the demands made on the Art Collection consist of requests for portraits of physicians, past and present, closely followed by pictures depicting medical scenes and medical buildings of earlier times.

Keys to modern works. The early books, which were such potent forces in the development of medical thought, will always remain of interest in gaining an understanding of how the profession reached its present eminence. But for day-to-day work the physician needs to know what is being done now. For that reason the Armed Forces Medical Library not only attempts to make a total collection of the medical literature of modern times, but also directs a major part of its effort into the publication of catalogs, bibliographies and indexes, and by more personalized reference services as the size of its staff may permit, in order that this literature may be made available to the entire medical community.

The *Current List of Medical Literature* is published monthly by the library as an index to the current periodical literature of medicine. Some 1,500 of the most important medical journals of the world are being indexed in this publication. These journals yield over 100,000 articles annually, to which half a million author and subject entries are provided. The last issue of each semi-annual volume provides a cumulated author and subject index of the preceding five numbers. The annual subscription rate is \$13.50; all communications regarding subscriptions

should be addressed to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

The *Armed Forces Medical Library Catalog* is an annual publication which brings together the cataloging record of books which have been received at the library during the year. The *Catalog* has two sections, authors and subjects, and contains entries for monographs, serials, theses, documents and pamphlets. It provides a guide to suitable form of entry for difficult materials, serves as a name authority, and as a tool for use in the classification and subject heading of medical books, beyond its principal use as a guide to the library's holdings. The 1953 *Catalog* is available from the Card Division, Library of Congress, Washington 25, D. C., at \$17.50 per copy; the 1954 *Catalog* will be a quinquennial cumulation in several volumes, available from the publisher, J. W. Edward, Inc., Ann Arbor, Mich. at \$64.

The *Index-Catalogue of the Library of the Surgeon General's Office*, published by the library since 1880, is a combined catalog of monographs and index of journal articles received at the library from its founding through March 1950; from this point forward it is superseded by the *Current List* and the annual *Catalog*. The 57 printed volumes of the *Index-Catalogue* comprise three complete alphabetical series, and the current incomplete fourth series, which will be concluded with the publication of the volume now in preparation. In its consecutive sets, the *Index-Catalogue* provides a great panorama of medical progress over the centuries, and includes a wealth of biographical and historical data.

Besides the major publications here listed, the library publishes occasional bibliographies of a comprehensive nature on subjects of more than

*SCHULLIAN, D.M. and SOMMER, F.E. "A Catalogue of Incunabula and Manuscripts in the Army Medical Library," Henry Schuman, New York, 1950.

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average current interest. Recent topics have included burns, plasma substitutes and military psychiatry. A comprehensive bibliography on bone physiology is in preparation and will be ready for distribution early in 1955. Copies may be obtained on request to the library.

General Services

In addition to its other services, the Armed Forces Medical Library attempts to aid users of its collections through interlibrary loans, photoduplication service and reference work.

Loans. All of the materials in the library, with the exception of very rare books, some reference works and unbound journals, are made available on interlibrary loan to local medical libraries. The Armed Forces Medical Library lends over 30,000 volumes annually in this way. Forms for obtaining interlibrary loans are available on request to the Library's Reference Division.

Photoduplication Service. The library maintains a photoduplication service, the purpose of which is to supplement the interlibrary loan system in helping those at a distance who cannot come in person to consult the collections. The library provides

single microfilm or photoprint copies of items in its collections, subject only to copyright restrictions, at a small fee (50¢ for 50 consecutive pages, in a single article, on microfilm; 50¢ for five consecutive pages on photoprint). About 100,000 photoduplication orders, comprising 2,000,000 pages of copy, are filled annually. Forms for ordering microfilm and photoprints, and coupons for making payments without the utilization of checks for small amounts, are available from the library's photoduplication section.

Reference work. Reference librarians are available to help those who can visit the library, but much of the work is carried on by correspondence. So far as the library's facilities permit, bibliographic searches on specific subjects are undertaken in response to requests from those who have exhausted the resources of their local libraries. Researchers working under contract with the Department of Defense may have preliminary searches of the literature made for their work, and bibliographic request forms outlining the subject to be investigated are available from the reference division of the library. It should be noted here, also, that the library does not provide translation services.

Editorials and Comments

A New Approach To an Old Problem

The problem of obtaining bodies for dissection and for instruction of medical students in human anatomy has always been a difficult one. There have been times in history when it was illegal to dissect a human body and other times when public sentiment was so opposed to such dissection that those engaging in it did so at their peril.

One of the early American laws favoring human dissection was that passed by the State Legislature of Massachusetts in 1784. It made the bodies of those killed in dueling and those executed for killing in a duel available to medical schools for dissection purposes.¹ In 1790 Congress authorized federal judges to assign the bodies of those paying the death penalty for murder to medical schools for dissection.¹ It was not until 1831 that the first state, Massachusetts, passed legislation assigning the bodies of unclaimed dead to recognized medical institutions.¹ Other states shortly followed Massachusetts' lead and the difficulties in procuring bodies for dissection were for some years considerably reduced.

The fact that the Welfare Department in many states now provides a burial fee for bodies of persons dying without funds in public institutions but with a relative or friend claiming the body, has greatly reduced the number of unclaimed bodies made available to medical schools for anatomical dissection. One difficult but possible answer to this problem has been to obtain the permission of the friend or relative and undertaker concerned, to postpone the interment of the body until it has served its purpose in the anatomy dissecting room.

A much more forthright approach to the problem is to announce the need to the public with the suggestion that a clause be inserted in the will of those willing to bequeath their bodies for dissection. Close relatives can, of course, legally annul this request on the death of the person making it since courts have ruled that once a person is dead his body belongs no longer to himself but to his estate.

But there are many evidences that this method of approach may meet with real success. The Wilder Collection of human brains at Cornell University Medical College has been in existence for many years. At least one American medical school places its chief dependence upon this method of obtaining bodies for dissection. After Annette Mills, a British television star, bequeathed her body for the advancement of surgery, "the Inspector of Anatomy of the Ministry of Health . . . had over 200 requests from persons asking how they may bequeath their bodies for dissection after death."²

1. NORWOOD, WILLIAM FREDERICK: "Medical Education in the United States Before the Civil War," University of Pennsylvania Press, Philadelphia, 1944.
2. "Bequeathing the Human Body," (Foreign Letters—England) *J.A.M.A.*, June 11, 1955.

If medical schools are to supply their needs for bodies for dissection through the method of bequeathment two matters will have to receive much more attention than they now receive: one, the need will have to be brought much more forcibly to the attention of the public, and two, habits will have to be developed in our laboratories of treating with more respect the bodies of those whose altruism and devotion to science have led them to make their bodies available for dissection purposes. D. F. S.

Our Readers Write

Dear Editor:

The financing of medical education by doctors themselves, an old-fashioned idea, has been given some new psychological understructure by Dr. Bird.* His common-sense approach is susceptible of further development. As a point of departure let us underline the near paradox that seems to have attracted little enough attention: the comfortable income of the established physician as compared with relatively small cost of his education. Recent surveys indicate that the established physician, on the average, clears enough in one year to pay for his medical school education. We are talking here of \$10-to-\$12,000 income, net after expenses and taxes, and the cost of his medical schooling, not just the tuition fees that now pay about a fifth of the cost.

Strictly as a business proposition, what could be more attractive? Here is an investment that will pay back 100 per cent per year after it gets rolling. From the physician's point of view, this is a worthwhile investment. Many small businesses are started without comparable promise and they require as much work as does medical training and practice. Yet the struggling young business is readily financed by investors willing to wait years for any return. Why, then, can't the physician be similarly financed? To the investor, the difference is sharp indeed. He ordinarily invests in an idea, process or physical plant. Financing education is gambling on a man's attainments. To the investor, this proposition is nothing more than a personal loan, and the local finance company is not interested in long-term propositions based on an average earning potential.

This merely restates the obvious. There is now no generally available mechanism for investing in the doctor's future, and relieving him of financial pinch during his education. There would seem to be an obvious source of funds, however. Insurance companies are ever in need of investments. They recently have come around to investing in common stocks, so perhaps they can be brought to see the value of an equity in the physician. Insurance funds must, of course, be conservatively invested, and it would be a radical step indeed for them to move into the field of personal loans. Yet, not so long ago the issuing of life insurance without a medical examination would have been considered catastrophic. New group insurance averages the risk. Investment in medical education would be investment in the average physician, and he averages very well indeed.

*J. Med. Educ. 29: 35-38.

Insurance companies must be the first to examine this opportunity because they would benefit secondarily. As the number and training of doctors improved, the insurance companies would benefit from the resultant longer life and decreased illness and disability. The relationship to increased profit and improved reserves is so direct and compelling as to be instantaneously obvious to the stockholders and to the regulating bodies that control investment policies. Union welfare funds might find opportunities in this direction similarly attractive.

The mechanics of such a loan system would seem to present no great obstacles. Loans would be allotted to groups with whatever horizontal or vertical distribution would give the best averaging. The groups of students to be financed might deal directly with the insurance companies, but more probably, the business of lending would be handled by a new corporation financed by insurance companies and by whatever other capital it could attract. Within the limits of the group allotment, the loan could be accepted by the individual in whatever amount he needed. It's not a gift, so the student can decide a little more objectively than is possible with a scholarship. Repayment probably would require flexibility to allow for future training or contingencies. Certainly the medical societies will want to consider underwriting some of the risk and responsibility. That way physicians now benefiting from subsidized education can contribute toward the education of the generation that will pay for their own.

For perspective, let us look at it from a point of view not usually taken by the educator. There exists in this country's commerce an area in need of capital for its fullest development. Properly financed it will pay the investor a good return, and offers unequalled side benefits to the investor. The country—the world—as a whole will benefit in a way that can not be otherwise attained. This situation has never obtained for long in this country without being solved along the patterns of American free enterprise. It seems inevitable that the problem of financing medical education will be solved in the same sensible way. *Ivor Cornman, Ph.D. Assistant Research Professor in Anatomy, George Washington University School of Medicine.*

Extension of the Doctor-Draft Law

The extension of the doctor-draft law is received with many misgivings by many medical educators and for a number of important reasons. It lengthens the period preceding the settling down of the young physician to a permanent practice, a period which is already too long and too expensive. (See the accompanying cartoon from the Chicago Tribune pointing up this problem.)

It makes long term planning of our young physicians much more difficult. By continuing to make military service obligatory for all doctors it places military medicine in the category of unwanted occupations and reduces greatly the likelihood of obtaining volunteer career physicians for the Armed Forces.

Since the doctor draft law has been extended there is nothing gained by lamenting the fact. There are a number of ways, however, in which the administration of the law could be changed so as to make the law less disruptive of medical education. Key teachers essential to the teaching program of medical school should be deferred as performing an

WHEN A FELLER NEEDS A FRIEND



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essential duty. Basic medical science students or medical students interested in preparing to be medical school teachers should be deferred to complete their basic training just as are the regular medical students. Young medical teachers in essential posts should not continue to have their future jeopardized by being frozen to a single post, but should be permitted to move from one essential post to another essential post if the second position offers greater scope for the individual's ability. Rules of thumb and regulations based blindly on precedent should not be permitted to substitute for an individual evaluation of all factors concerned in judging the essentiality and deferability of a medical teacher.

The new law is to be commended in releasing from further requirements those physicians over 35 who have at previous times attempted to volunteer for military duty and have been rejected for physical reasons. D.F.S.

NEWS DIGEST

MEND NEWS

Special invitations to the 62nd Annual Convention of the Association of Military Surgeons have been extended to members of medical faculties, especially to those participating in the MEND Program. The Association president, Maj. Gen. Joseph I. Martin, Chief Surgeon of the U. S. Army in Europe, has announced that this year's meeting, November 7-9, Hotel Statler, Washington, D. C., will present a program on the medical problems facing civilian and military organizations in an atomic war.

The first afternoon session will discuss the "Medical Effects of Nuclear Warfare," including the characteristics of nuclear explosions, and the injuries due to blast, heat and radiation.

The second day's program will be devoted to the "Principles of Care of Mass Casualties," and will deal with the following topics: protective measures; initial aid and rescue, sorting of casualties; emergency medical care; cost of delays in treatment; treatment of large numbers of blast, thermal, radiation and neuropsychiatric casualties; the use of drugs, blood and anesthetics in dealing with mass casualties; and the public health, sanitation and welfare problems in atomic attacks.

The third day will be given over to "Organization for the Management of Mass Casualties," and will focus on utilizing all medical and paramedical personnel and on use of existing and improvised facilities in dealing with thousands of casualties at one time.

The speakers will be drawn from Army, Navy, Air Force, U. S. Pub-

lic Health Service, Federal Civil Defense Administration, Veterans Administration and civilian medical groups throughout the country.

The Washington Office of MEND will be glad to furnish any additional information or assist any faculty member desiring to attend.

Foreign Doctors Here

More than a quarter of the foreign doctors training here in 1954-55 were from the Far East, a survey by the Institute of International Education reveals. A total of 5,036 doctors from 84 different countries spent the year at American medical institutions in 42 states, the District of Columbia, Hawaii, Puerto Rico and the Canal Zone. Latin America and Europe together accounted for half the group, with the rest coming from Canada, Africa, Oceania and the Near and Middle East.

Sixty-five percent (3,275) of the visiting doctors were in advanced training here, while 1,761 served as interns. The largest group specialized in surgery (663), and 506 were in general medicine. In all cases, the physicians were attached to institutions approved by the American Medical Association. The AMA also cooperated with the Institute of International Education in making the survey from which these statistics are taken.

In addition to those doctors who were here to receive training, 137 professors in the field of medicine taught here at American educational institutions. They were part of a group of 635 professors, from 50 different countries, who were at colleges and universities in 39 different states. More than half of this group was

from Europe, one-fifth from the United Kingdom. There were groups from China, Canada, India, Germany, France, Japan, Switzerland, Italy and The Netherlands.

Palsy Grants

United Cerebral Palsy has announced the awarding of 46 new grants, totalling \$395,000, as the spring part of its 1955-56 medical research and training program. Twenty-three of these grants, totalling \$207,193, are for medical research studies in basic neurology or clinical investigation. The remainder, amounting to \$187,807, will be used to train physicians, physical and occupational therapists, teachers, dentists, vocational guidance counselors and pediatric neurologists, who work with the cerebral palsied. Other training grants support summer workshops or year-round training programs at hospitals and universities.

Heart Association Grants

Applications for grants-in-aid from the American Heart Association should be submitted by November 1, 1955, a month earlier than usual. These grants are awarded in varying amounts up to \$10,000 for work on specific projects in cardiovascular research.

Applicants for the AHA research fellowships or established investigatorships should submit their bids by September 15, 1955. These investigatorships are awarded for periods up to five years to scientists of proven ability who have demonstrated the ability to carry on independent research. The fellowships are awarded for one to two years to students with doctoral degrees for work under experienced supervision.

All awards are for the year beginning July 1, 1956. Further information and application blanks can be obtained from the Medical Director, American Heart Association, 44 East 23rd St., New York 10, N. Y.

College Briefs

Columbia

Four senior faculty members have just received the rank of professor emeritus. They are Dr. JAMES BURNS AMBERSON, professor of medicine; Dr. GEORGE FRANCIS CAHILL, professor of urology; Dr. MAURICE LENZ, professor of clinical radiology, and Dr. FRANK LAMONT MELENEY, professor of clinical surgery.

Georgetown

Dr. DESMOND S. O'DOHERTY, of the department of neurology, has been elected president of the hospital staff at the Georgetown medical center.

Illinois

Dr. HENRY G. PONCHER, former head of the department of pediatrics, died recently at the age of 53. Dr. Poncher joined the faculty in 1928, and became head of the department

in 1944. He was named professor in 1952, at the time of his leaving to become director of health at Valparaiso University in Indiana.

The following members of the faculty will become professors emeriti when they retire on September 1: Dr. F. E. SENEAR, head of the department of dermatology; Dr. W. H. THEOBALD, department of otolaryngology; Dr. B. H. HILKEVITCH, department of medicine; Dr. E. J. BERKHEISER, department of orthopedics; Dr. H. R. HOFFMAN, department of psychiatry; Dr. A. BAMBERGER, department of surgery, and Dr. R. L. BAKER, department of surgery.

Medical Evangelists

A grant of \$18,000 from the Los Angeles County Heart Association has been awarded to the college for a study of the diseases of the heart and blood vessels.



ARCHITECT'S SKETCH above shows proposed addition to Northwestern University's \$20 million Medical Center. The three tall buildings are 12-story hospital wings. In front is a two-story medical clinic, and behind it a four-story institute for pathology. The center is planned as part of Northwestern's \$138,500,000 long-range development program.

Miami

Dr. RALPH E. JONES Jr. has been appointed chairman of the department of medicine, effective July 1. Dr. Jones was formerly director, Robinson section, department of medicine, University of Pennsylvania hospital.

Dr. JAMES H. FERGUSON, formerly of Tulane University School of Medicine, has been appointed chairman of the department of obstetrics and gynecology.

S.U.N.Y.—Brooklyn

A primary teaching affiliation has been approved between the department of medicine and the medical service of the Jewish Hospital of Brooklyn.

A grant of \$24,570 was awarded Dr. WILLIAM DOCK of the department of medicine by the National Heart

Institute for his study of undergraduate heart training.

The National Institutes of Health granted \$10,050 to DR. LEON CHESLEY of the department of obstetrics and gynecology for his studies of body fluids in normal and toxic human pregnancy.

U. S. C.

An item in the August issue referring to the fund-raising drive for a new medical center was inadvertently attributed to U.C.L.A. instead of U.S.C.

Yale

A grant of \$12,705 has been awarded to Dr. ROBERT E. COOKE, professor of pediatrics and physiology, by the Association for the Aid of Crippled Children. Dr. Cooke will use the grant to study the causes and results of injury to the child during birth.

Audiovisual News

Visual Literature of Medicine

A great proportion of the objective content of medicine is visual and can be pictured. Our eyes are our principal sense organ for recording data pertinent to accurate diagnosis and treatment. Pictures, whether images of real patients seen or phenomena transmitted through teachers, comprises a very high proportion of the material learned by students.

There is no conflict among teachers concerning the principles of visual learning. The problem simply resolves itself to the current impossibility of telepathic communication of strings of accurately detailed pictures from the mind of the teacher to the mind of the learner. Therefore, we must substitute some medium of expression: either words (for we carry our tongues with us), or pictures via camera, drawings, etc.

It should be emphasized that the language of pictures is direct, without semantic confusions, and with a minimum of cultural obstacles, although these do exist. This language of pictures is being harnessed for our uses today, thanks to newer and ever better media of communication. Medical education has been one of the favored beneficiaries of graphic and photographic processes in all their forms, so far culminating in the still crude powers of color television.

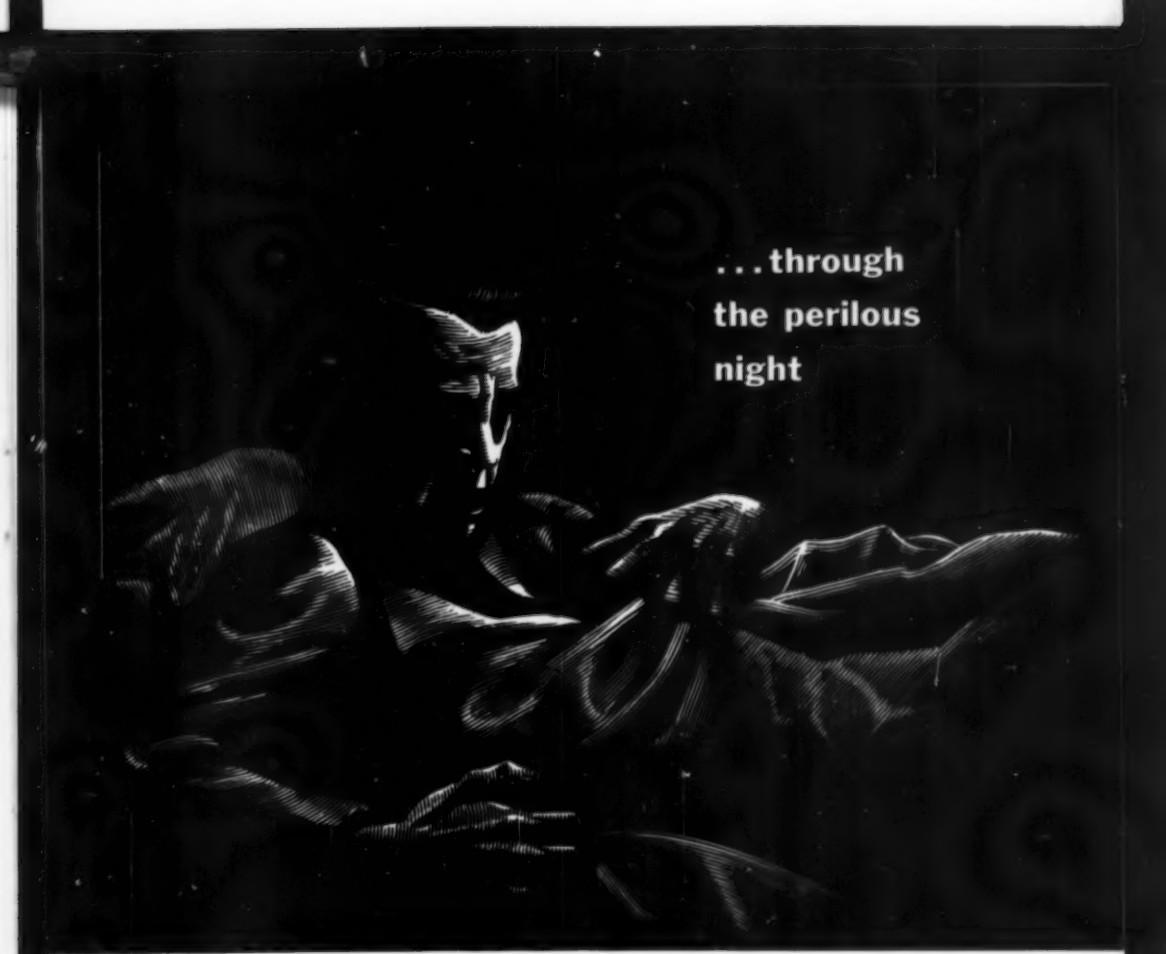
Medical pictorial "literature" has been valued highly ever since the first atlases of drawings were produced. Cheaper methods of photography and photoduplication will one day make possible inexpensive pictorial textbooks which will shame LIFE magazine. However, until the visual millenium arrives, medical teachers must apply consciously the

concept of a visual literature until it is as much taken for granted as is the verbal literature. For certain systematic uses of the visual literature are already possible, and should be embarked upon now without conscious or subconscious shibboleths.

We need not be too concerned with the literature of still pictures in medical books; the publishers will exploit all progress with great rapidity. Still pictures in slides, etc. are coming of age with mass production of cameras and film. However, motion pictures are currently a more formidable problem, but not less worthy of solution.

It should be recalled that motion pictures are often the primary literature of medicine, from which the words of the printed publications came. Such are the films of the French pioneer Comandon, Arnold Gesell, Davenport Hooker, Bradley Patten and Wilton Earle to name a few. In addition, in many teaching films lie buried precious pieces of footage which make all words futile. Certain presently available series of films on congenital heart disease, on the principles of joint surgery, on fractures, on rehabilitation, suggest that many such series should be owned by every teaching medical center. In a film library can be assembled all the many valuable pieces of film "literature," to be used in classes, of course, but also to be given as "assigned viewing" to students for off-hour repetition and fortification of their classroom and laboratory experiences.

It seems very likely that when motion pictures become far cheaper to purchase and handle (perhaps as magnetic tapes), medical center libraries will develop great storehouses of visual materials, including



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1. Winsor, T., and Humphreys, P.: Angiology 3:1 (Feb.) 1952. 2. Plotz, M.: New York State J. Med. 52:2012 (Aug. 15) 1952. 3. Dailheu-Geoffroy, P.: L'Ouest-Médical, vol. 3 (July) 1950.

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television kinescope recordings. The visual literature will then be available for review by researchers seeking direct information. It will be tapped, as needed, by teachers who will wish to teach what is visual and in motion with, logically, motion pictures. Students will be able to come to the library and check out films for study just as they check out books, and they will themselves own basic visual "texts" of motion pictures. Television kinescopes will recall course material for review. In short, films will be handled for the same purpose as are books: as a route to knowledge. Quite possibly, and quite properly, films will be "published" by the book companies, following the lead of McGraw-Hill Book Company. With complete propriety the medical libraries will handle the visual materials, changing their names enroute to "Communication Centers" or some such broader title.

The visual literature is an accomplished fact. It remains for us in medical education to change our thought processes and methods to accommodate and hasten one of the great revolutions in human communication: the direct transmission of pictorial material from human to human. D.S.R., K.U.M.C.

Power Tools for Teaching

The National Audio-Visual Association held its 10th Annual Convention in Chicago, July 24-27. There were representatives of 700 audio-visual dealers, manufacturers and film producers. This reflects the rapid growth of a relatively new and expanding industry. Fortunately, the industry does not assume that the increased use of AV materials and equipment will necessarily mean better education.

"Automation is not and will not be a source of better education," said Don White, executive vice president of the association. "While films and other audiovisual devices very greatly increase and accelerate learning, they are only "power tools" to

help the teacher achieve more learning in less time. The teacher always has been and must continue to be the key to successful utilization of these powerful new devices, and the course of our audiovisual industry must be to continue to develop tools that will help the teacher do a superior job."

AV Conference

AV representatives of 14 medical and allied associations or groups met concurrently with four other educational groups convening at the time of the National Audio-Visual Trade Show and Convention. This was the third annual AV Conference of Medical and Allied Sciences devoted to the exchange of information and the solving of such common problems as the international exchange of films. The planning committee for the 1955 conference included: chairman, J. Edwin Foster, Medical Audio-Visual Institute of the Association of American Medical Colleges; vice chairman, Helaine S. Levin, American Dental Association, and secretary-treasurer, Helen Yast, American Hospital Association.

Aid for Aphasics

A modified tape recorder has been developed which will play back selected words or phrases. The sound is on cards, rather than spools of tape, which are individually hand fed into the playback. This means that words, phrases or sentences can be selected from a file, heard in any chosen sequence, and presented as often as desired by the user. Earphones may be used instead of a speaker if desired.

The Language Master, as it is called, will be handled by the McGraw-Hill Book Company, Inc., New York, N.Y.

Summaries of Film Reviews

Bronchovascular Anatomy

23 min., sd. (magnetic), color, 16 mm., 1953 (Bolex stereoscopic film).

Part I, on the tracheobronchial tree, utilizes a colored case model in which

the bronchopulmonary segments are differentially colored. As the cast is rotated from AP to lateral and posterior views, the segments of the right and left lobes are described, and relationships are indicated by pointer. Some variations in segmentation are demonstrated. Part II, on the pulmonary arteries and veins, utilizes a differentially colored model. The red arteries of the right lobes and their variations are demonstrated by rotation of the model, followed by similar pointing to arteries of the left lobes, and to blue veins of both lungs.

The content of this illustrated lecture film is valuable and dramatic. Unfortunately, the film presentational technique is inadequate for good visual learning when seen as a two dimensional film. There are no big closeups and no visual analysis to prevent the confusions attendant upon using very complex models, however excellent. The magnetic sound track is of irregular quality; even more important, there is abundant dissociation of voice and screen picture.

In its current form the film is useful only as a review, following adequate presentation of the material by other routes. In the hands of its authors it doubtless has optimal impact, but in its current form is probably best considered as a trial film for an improved later version of this important anatomical material. D.S.R., February 1954.

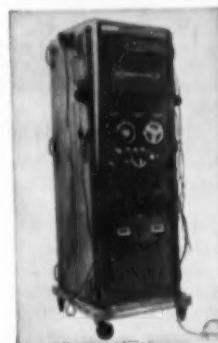
Audience: Students of anatomy, chest surgeons.

Reference: "Thoracic Surgery and Related Pathology," Lindskog, G. E., and Liebow, A. A. Chapter IV, Appleton-Century-Crofts, 1953.

Production Data: Sponsors: Office of Naval Research, U.S. Navy Department; **Authors:** Bloomer, W. E., M.D., Liebow, A. A., M.D., and Hales, M. R., M.D., Laboratory of Pathology, Yale University School of Medicine, New Haven, Conn.

Distribution: The authors, Yale University, School of Medicine, 333 Cedar St., New Haven, Conn., Conn.

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Book Reviews

Pharmacological Basis of Therapeutics— 2nd Edition

Louis S. Goodman and Alfred Gilman. MacMillan Company, N.Y.C., 1955. 1848 pp. with index. \$17.50.

The second edition of Goodman and Gilman's "Pharmacological Basis of Therapeutics" is truly an encyclopedic book of reference. Almost 500 pages have been added since the first edition was published in 1941. Additional chapters include: histamine and its antagonists, inhibitors of renal transport, drugs used in treatment of protozoal infections, penicillin therapy of syphilis, chemotherapy of tuberculosis, four chapters on antibiotics and a short chapter on general principles of toxicology. Chapters excluded from the second edition are: abortifacients, arsenical and other metals in therapy of syphilis and reduction of four chapters on the sulfonamides to one. These, as well as additional omissions, e.g. archaic practices, are certainly in order.

The format has changed, now a two-column, more easily read page, with clearly titled sections, making it easier for the reader to find the information he seeks. The discussion is grouped on the basis of therapeutic uses of drugs, and both diseases as well as drugs are considered in an effort to cover fully the primary objective of the authors, namely to present a more rational approach to drug therapy. The introductory chapter on general principles might well be enlarged.

References to current literature, including monographs and reviews are more complete than in the first edition. It is obvious, in the subject matter of each chapter that the authors have critically synthesized a readable presentation. This is especially true of chapters dealing with drugs affecting the central and peripheral nervous systems. In some other areas, such as certain aspects of chemotherapy, viz., the anthelmintics have not been cut as drastically as one would hope. Thus, for the uninitiated student, it would be difficult, without very careful reading to

obtain a fair judgment of the relative value of the multitudinous agents which now are available. Here, then, is a reference in pharmacology in the classical sense, which presents every phase of drug action.

Certain sections are outstanding: viz., general anesthetics, drugs effective in convulsive disorders, drugs acting on autonomic effector cells, digitalis and allied cardiac glycosides, morphine and other opium alkaloids, local anesthetics, diuretics, mercury and other metals and penicillin.

Considering the wide scope and diversity of current pharmacology and toxicology, one should not expect all phases to be presented with equal care and judgment. But because of the general excellence of presentation and up-to-date character, this textbook can be recommended as adequate reference source for students of those professions who use drugs in their practice.

Hamilton H. Anderson, California

Clinical Pathology in General Practice

British Medical Association. London, 1955. 321 pp. with index.

In this book, the primary orientation for the practitioner appears to be the scope and the use of laboratory diagnostic facilities under the National Health Service and the Public Health Laboratory Service of Great Britain. Accordingly, emphasis is on the collection, preservation, handling and shipping of material to be examined.

The subject of clinical pathology as presented is neither complete nor detailed and appears to point up what the facilities can do rather than what is the best procedure for diagnosis. For example, cytodiagnosis is considered a "research" method and immediate fixation of all surgical biopsy material is advised (presumably for disinfection as much as for fixation).

One seriously regrets the disregard for bacteriological examination of surgical specimens. With very few exceptions (namely, urinalysis), principles and

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The chief aim of the author is to demonstrate the actual clinical use of that current biochemical knowledge which will contribute most toward restoration of normal physiologic and nutritional states. The scope is comprehensive but without weighty technical descriptions or page upon page of involved formulae.

This is indeed a text the student can understand and derive real benefit from. Educators like it. If you are teaching biochemistry and have not seen this fine book, ask for a 30-day examination copy.

By William S. Hoffman, Ph.D., M.D., Professorial Lecturer in Medicine, University of Illinois, former Director of Biochemistry, The Hektoen Institute for Medical Research of Cook County Hospital, Chicago. 681 pages; illustrated. \$12.00.

Bernstein's INTERN'S MANUAL

New!—Every clinical student will find this compact and authoritative manual highly instructive. Based on the vast experience of the Cook County Hospital, Chicago, it is in essence a compendium of the essentials in the practice of medicine, surgery and the specialties—By Arthur Bernstein, M.D., Assistant Medical Superintendent, Cook County Hospital, Chicago. 292 pages; illustrated. \$3.00.

Kjellberg and Associates on DIAGNOSIS OF CONGENITAL HEART DISEASE

Just Published!—The techniques, evaluations and interpretations of one of the world's most famous clinics presented in a magnificently illustrated volume which shall surely become a classic—By Sven Roland Kjellberg, M.D., Edgar Mannheimer, M.D., Ulf Rudhe, M.D., and Bengt Jonsson, M.D., The Cardiac Team of the Pediatric Clinic, Karolinska Sjukhuset, Stockholm. 641 pages; 1845 illustrations on 618 figures. \$22.00.



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techniques of laboratory procedures are not given while a generous portion of the text is devoted to operative techniques, such as venipuncture, lumbar puncture, thoracentesis, biopsies and autopsy. On the other hand, it would serve the practitioner well to be familiar with the directions and discussions, as given in this text, whatever his facilities for diagnostic clinical pathology may be.

J. F. Kuzma, Marquette

Segmental Anatomy of the Lungs

Edward A. Boyden, Ph. D. The Blakiston Division, McGraw-Hill Book Company, Inc., New York, 1955. 276 pp. with index and 136 illustrations. \$15.

The exceedingly high standard of completeness and accuracy of this book is established in the first chapter, "Historical Review," and is maintained throughout the following chapters.

The second chapter presents the prevailing patterns of the various parts of the bronchial tree and the distributions of the segmental and subsegmental branches in these prevailing patterns. Emphasis is rightfully placed on the fact that the prevailing patterns are not a matter of opinion but are based on statistics resulting from the examination of large numbers of specimens. A thorough discussion of terminology is included in this chapter.

Chapters three through eight contain complete presentations of the results of painstaking studies made by Dr. Boyden and his colleagues on many specimens of each lobe of each lung. The segmental and subsegmental bronchi, their areas of distribution and the related arteries and veins are described for each lobe. All of this is documented by many excellent drawings of specimens and tabulations of the incidence of the multitude of variations encountered. The similarities and differences in the right and left lungs are emphasized, and the practical details necessary to the clinician are indicated.

Chapter nine presents the development of the lungs and points out the way in which it contributes to the interpretation of the completed structure. Agenesis, the left eparterial bronchus, the lobe of the azygos vein, accessory pulmonary arteries and congenital cysts of the lung are also discussed.

The tenth and final chapter consists of a series of plates which depict the bronchi, arteries and veins of two com-

plete sets of lungs. Views of seven dissected surfaces of a pair of embalmed lungs and four views of vinyl acetate casts of the bronchi, arteries and veins of a second pair of lungs are presented. Dr. Boyden offers these as a corrective for the oversimplification necessary in the teaching of gross anatomy of the lung.

This book presents a very thorough and accurate study of the segmental anatomy of the lungs and is a "must" for anyone with a real interest in the lung.

John Franklin Huber, Temple

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

Clinical Toxicology

Clinton H. Thienes, M.D. and **Thomas J. Haley**, Ph. D. Lea & Febiger, Philadelphia, 1955. 457 pp. with index.

Transplantation of Tissues, Volume I

Lyndon A. Peer, M.D. The Williams and Wilkins Company, Baltimore, 1955. 421 pp. with index. \$13.50.

Segmental Anatomy of the Lungs

Edward A. Boyden, Ph. D. The Blakiston Division, McGraw-Hill Book Co., Inc., New York, 1955. 263 pp. with index. \$15.

Clinical Biochemistry, Fifth Edition

Abraham Cantarow, M.D. and **Max Trumper**, Ph. D. W. B. Saunders Company, Philadelphia, 1955. 728 pp. with index.

Differential Diagnosis: The Interpretation of Clinical Evidence

A. McGehee Harvey, M.D. and **James Bordley III**, M.D. W. B. Saunders Company, Philadelphia, 1955. 665 pp. with index.

Cornell Conferences on Therapy, Volume VII

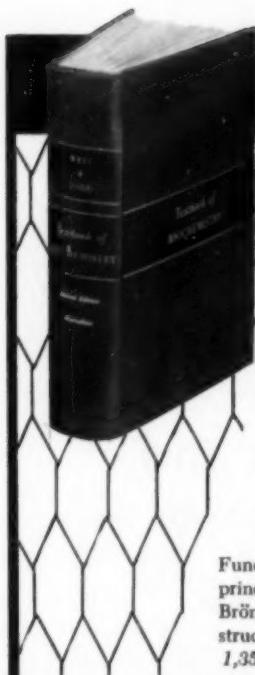
Edited by **Harry Gold**, M.D. The Macmillan Company, New York, 1955. 259 pp. \$4.50.

Experimental Studies on Carcinoma and Precancerous States

Shin-Ichi Matsumoto. Kyoto University, Japan, 1954. 198 pp.

Problems of Consciousness:

Transactions of the Fifth Conference, March 22, 23 and 24, 1954. Edited by **Harold A. Abramson**, M.D. Josiah Macy, Jr. Foundation, New York, 1955. 180 pp. with index.



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Merritt — Textbook of Neurology

By H. HOUSTON MERRITT, M.D.

Professor of Neurology, Columbia University; Director of the Service of Neurology,
Neurological Institute, Presbyterian Hospital, New York

NEW. Students will be especially appreciative of this present-day application of modern neurologic principles. Dr. Merritt presents diseases of the nervous system as an integral part of internal medicine. The entire subject is described clearly in general medical terms. Terminology peculiar to the specialty has been avoided in order that the material might be grasped readily by those not too familiar with the subject. Full consideration is given to common diseases of the nervous system and established methods of treatment are detailed. There are ample discussions of the physiological and biochemical factors in the pathogenesis of disease.

New. 746 Pages. 181 Illustrations and 128 Tables. \$12.50.

Faust — Animal Agents and Vectors of Human Disease

By ERNEST CARROLL FAUST, M.A., PH.D.

The William Vincent Professor of Tropical Diseases and Hygiene and Head, Division
of Parasitology, Department of Tropical Medicine and Public Health,
The Tulane University of Louisiana, New Orleans

NEW. Parasitism constitutes one of the major phenomena of the living world, and therefore one of its most interesting and challenging subjects. A highly important phase of parasitology is the broad area involving *animal agents and vectors*, and their relation to *human disease*. Dr. Faust, widely known for his work in this field, presents a full discussion of those parasites which produce diseases, with particular reference to their attacks on and the reactions of the human host. Etiology, epidemiology, pathogenesis, symptomatology, diagnosis and control of this group of infections are given in detail. Ample references conclude each chapter.

New. 660 Pages. 216 Illustrations and 9 Plates 1 in Color. \$9.75.

Burch and Winsor — Primer of Electrocardiography

By GEORGE E. BURCH, M.D., F.A.C.P.

Henderson Professor of Medicine, Tulane University School of Medicine

and TRAVIS WINSOR, M.D., F.A.C.P.

Assistant Clinical Professor of Medicine, University of Southern California, Los Angeles

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Faculty Vacancies

- UNESCO has been asked to suggest candidates for the following posts abroad: Professorships in pathology, international medicine, surgery and ophthalmology (Tabriz, Iran). Professorships in physiology, chemistry, surgical dentistry and dental prosthetics (Baghdad, Iraq). Professorships in anatomy and physiology and lectureships in anatomy, physiology and pharmacology (Jerusalem, Israel). A number of professorships and lectureships in various preclinical subjects (Djakarta, Djocjakarta and others in Indonesia). Address: Enquiries and applications to UNESCO, Exchange of Persons Service, 19 avenue Kléber, Paris 16, France.
- DIRECTOR—MEDICAL EDUCATION: 750 bed non-profit hospital with Protestant church affiliation desires services of physician with a background in the field of medical education with administrative ability to direct resident and intern program and to key continuing attending staff medical education. Excellent salary opportunity. Address: V-32.
- VIROLOGIST: Full-time faculty position in Eastern medical school department of bacteriology now occupying new laboratories for virus research, including facilities for tissue culture. Teaching of medical and graduate students. Time for research of own choosing. Rank and salary depend on experience and training. Address: V-33.
- FELLOW IN FORENSIC PATHOLOGY: Fully approved; complete facilities for training in pathology, toxicology and administrative legal medicine. Remuneration commensurate with training and experience. Reply: Department of Legal Medicine, Medical College of Virginia, Richmond, Va.
- PHYSIOLOGY: Assistant professor, Dalhousie University, Halifax, Nova Scotia. Salary \$4,800. Teaching load not heavy. Ample opportunity for original research. Apply to the dean, faculty of medicine.
- PUBLIC HEALTH PHYSICIAN: New York State Department of Health has opening for a public health physician who has specialized in diagnosis and treatment of tuberculosis, including the interpretation of chest X-ray films. Salary \$10,470, with five annual increments to \$12,510. Benefits. Qualifications include citizenship, possession of or eligibility for New York State medical license, and four years of specialized tuberculosis experience. Further information from Richard H. Mattox, Director, Office of Personnel Administration, New York State Department of Health, State Office Building, Albany 1, New York.
- DENTAL SURGEON: University of the Witwatersrand, Oral and Dental Hospital and Department of Dentistry, Johannesburg, S. Africa. Senior full-time dental surgeon, lecturer and clinical lecturer in dental prosthesis and dental mechanics. Salary and allowances £1,600 x £50 to £2,100 per annum plus £234 per annum temporary cost-of-living. Address: William D. Carter, Head, Exchange of Persons Service, UNESCO, 19 Avenue Kléber, Paris 16, France.
- PHARMACOLOGY: Assistant professor, Medical College of Georgia. M.D. or Ph.D. Teaching of medical students and excellent opportunity for independent research. Address: R. P. Ahquist, professor of pharmacology, Medical College of Georgia, Augusta, Ga.
- CLINICAL PSYCHOLOGIST: Ph.D., male or female. Full-time faculty position. Psycho-diagnosis and psychotherapy with children and adults in a psychiatric setting employing team approach. Interdisciplinary research. Teaching of medical and nursing students. Accredited hospital internship required. Prefer, in addition, experience in child guidance clinic. Salary \$6,000. Address: Dr. S. J. Fields, senior clinical psychologist, Department of Psychiatry, University of Arkansas Medical School, Little Rock, Ark.

Personnel Available

- CHEMIST: Ph.D., minor in biochemistry, male, 10 years of research in medicinal chemistry, large pharmaceutical house. Publications, patents. Desires position in chemical-biochemical research in medical field. Particularly interested in position which would broaden experience by contact with other medical sciences. With or without teaching. Address: A-158.

- PHYSIOLOGIST: Ph.D., male, 30, family. Desires research and/or academic position in eastern part of U.S. Three years experience as research biologist with large eastern pharmaceutical company. Also teaching experience. Address: A-159.



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To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 185 N. Wabash Ave., Chicago 1, Ill., not later than the 10th of the month which precedes the month in which the listings will appear.

- MICROBIOLOGIST: Medical, male, Ph.D., 37, married. Experience includes public health laboratory, industry (antibiotic research), and teaching all phases of medical microbiology. Present position associate professor microbiology in medical college. Wide research background in antibiotics, immunology, tuberculosis, bacterial dissociation. Have some training in use of isotopes. Desires teaching appointment with research opportunities in a medical school located south. Address: A-160.
- MICROBIOLOGIST: Ph.D., 30, presently assistant professor in medical school. Desires position in medical school in teaching and/or research with opportunity to complete work toward M.D. at least part time. Publications, associations, family, honorary societies. Ambition teaching and research in basic science. Address: A-161.
- ENDOCRINOLIST—PHYSIOLOGIST—ANATOMIST: With administrative experience desires position in graduate school of arts and sciences or medical school in teaching-research position. Harvard Ph.D.: seven years teaching-research experience, six years at Harvard. Extensive experience in endocrinology, general physiology, histology, medical genetics and zoological sciences. Interested in experimental medicine. Many publications. Membership in Sigma Xi, Kappa Delta Pi, Phi Sigma, N.Y.A.S., A.A.A.S., Amer. Soc. Zool. and others. Will accept administrative responsibilities. Address A-162.
- PHARMACOLOGIST: Ph.D., 26, married, two children. Director of research for established pharmaceutical company and medical student with part-time standing. Original publications, scientific societies, Soc. Experimental Biology and Medicine; American Federation for Clinical Research. Desires academic position with research possibilities while finishing medical school. Address: A-163.
- BACTERIOLOGIST: Male, 30, M.Sc., married. Seven years teaching and research experience in medical bacteriology. Desires part-time position with opportunity to work toward advanced degree. Present total college credit 260 semester hours. Present position an instructor in pathogenic bacteriology in medical school. Address: A-164.
- PUBLIC HEALTH AND PREVENTIVE MEDICINE: M.D. M.P.H. Fellow of the American Public Health Association, age 44, to be discharged from Army tour May 31, 1955. Desires to teach in a department of public health and preventive medicine, in a medical school. Six years experience in the practice of public health with some teaching experience, other experience in psychiatry and general practice. Address: A-165.
- ANESTHESIOLOGIST: 32, married, three children, veteran. Interested in heading a university anesthesia department. Five years experience in internal medicine before entering anesthesiology. Experienced in teaching and research. At the present time completing training at leading university hospital. Available December 1. Address: A-166.
- VIROLOGIST—BACTERIOLOGIST: Male, Ph.D., age 30. Teaching and research experience in medical bacteriology, general microbiology and virology. Tissue culture experience as applied to virology. Desires teaching position with opportunities for research. Address: A-167.
- OBSTETRICIAN-GYNECOLOGIST: Male, married, Board eligible. University teaching experience. Seeking change of location. Prefer full-time permanent academic position with opportunities for clinical investigation. Address: A-168.
- PHYSIOLOGIST: Ph.D., 39, broad biological training. Wide experience in teaching and research. Desires teaching position with opportunity for research. Experience in biometry. Research interest and experience in connective tissue permeability and biological effect of x-rays. Immediately available. Address: A-169.
- PEDIATRICIAN: Female, single. Candidate for M.P.H. Diplomate, American Board of Pediatrics. Interested in child health, teaching and research positions. Available July 1. Address: A-170.
- INTERNIST—CLINICAL PATHOLOGIST: Certified in both specialties, age 44, recently discharged from military service. Extensive research and teaching experience. Listed in coming editions of Am. Men of Science and Blue Book of Awards. Desires permanent ranking academic and/or research position. Will consider directorship of hospital laboratories. Address: A-171.
- INTERNIST: Age 31, M.Sc. (Med.), desires full-time administrative or clinical teaching post in a medical school or hospital. Has teaching and research training. Available September 1955. Address: A-172.
- SURGEON: Age 32, veteran, married. University-trained. Diplomate American Board of Surgery. At present instructor in surgery large midwestern university hospital, desire full or part-time academic appointment for teaching and research as well as clinical. Address: A-173.
- PHYSIOLOGIST-ENDOCRINOLIST: Ph.D., married, veteran. Eight years teaching experience. Presently assistant professor at medical school. Wishes to relocate on the Pacific Coast or in Canada for health reasons. Member of many professional societies. Pub-

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lications. Desires teaching position and research opportunities. Available summer 1955. Address: A-174.

• OBSTETRICIAN - GYNECOLOGIST: 45, married. Diplomate of American Board. Now assistant professor in large eastern university college of medicine and full-time director of service in an affiliated medical center. Extensive and varied clinical experience. Teaching experience at both undergraduate and postgraduate levels. Experience in administrative and executive capacities. Several clinical scientific publications. Desires full-time teaching position as department head in a university college of medicine with ample provisions and opportunity for both basic and clinical research. Address: A-175.

• GERMAN PHYSICIAN AND SURGEON: Educated Frankfurt/Main University, now in practice in Frankfurt/Main. Seeks academic position in United States, also information on residencies or internships. Address: A-176.

• RESEARCH ASSOCIATE: in fields of virology, bacteriology or immunology in a medical college. Ph.D. in bacteriology from State University of Iowa. Address: A-177.

• PATHOLOGY-BACTERIOLOGY: Desires teaching and research. Presently director of laboratories and medical examiner in U. S. Overseas Territory (Guam). Research work on tuberculosis and amyotrophic lateral sclerosis. Publications, societies. Ph.D. in microbiology. Teaching experience. Address: A-178.

• ANESTHESIOLOGIST: M.D., Ph.D., bio-chemistry and pharmacology, university trained and experienced. Available and interested in opportunity, preferably East coast, beginning July. Address: A-179.

• MEDICAL WRITER: Woman, B.S., B.J., University of Missouri, 1950. Major in special writing; five years newspaper experience; will have completed 16 credit hours in university school of medicine by August. Membership in Theta Sigma Phi and Kappa Tau Alpha, national honorary journalism fraternities. Available September 1. Address: A-180.

• PHYSIOLOGIST: Ph.D., 33. At present holds teaching and research position in medical school (6 years). Present rank assistant professor. Desires teaching position with research opportunities. Address: A-181.

• MICROBIOLOGIST: 24, Indian, B.Sc. (Microbiology) and B.Sc. (Chemistry) Bombay University. Experience in virus research and laboratory and serological work. Desires to study for Ph.D. in microbiology or bacteriology. Prepared to work on stipend or fellowship under any capacity. Address: A-182.

• BIOCHEMIST: Chemical pathologist, 20, Indian. B.Sc., M.Sc. Bombay with biochemistry, chemistry of food and drugs, first class B.Sc. (tech.). Research experience in enzymology, sterols. Taught chemical pathology, hospital biochemist for three years. Desires postgraduate studies in biochemistry or chemical pathology leading to Ph.D. Prepared to work on stipend or fellowship in any capacity. Address: A-183.

• PSYCHIATRIST: 31, male, M.D., B.A. (psychology), seeks part-time teaching position in Philadelphia area. Experience in teaching at graduate and undergraduate level. Dynamic orientation. Address: A-184.

• PHYSIOLOGIST: Ph.D., 28, married. Experience in research and teaching mammalian physiology. Research interest in neurophysiology and comparative physiology. Publications. References. Desires teaching-research position. Address: A-185.

• SURGEON: University trained, certified by general and thoracic boards, early 40's, family. Experienced in applied cardiopulmonary physiology as well as all phases of thoracic and cardiac surgery. Presently director of large teaching unit in East. Publications include basic investigation. Desires relocation, preferably full-time, with opportunity to develop own unit along three lines, service to patients, teaching and investigation. Address: A-186.

• MEDICAL ILLUSTRATOR: Male, single, 27, draft exempt, presently employed full-time in a university medical school and hospital. Desires changes and position with better future. Six years actual experience in scientific and technical illustration for lantern slides and publication. References and samples will be furnished. Address: A-187.

• ANATOMIST-ENDOCRINOLIST: Ph.D., 32, family, desires teaching-research post in medical school. Three years experience directing endocrine and pathology sections in pharmaceutical house. Good teacher with experience in the various phases of anatomy. Publications and societies. Will accept administrative responsibilities. Available September 1, 1955. Address: A-188.

• MEDICAL WRITER: 42, honor graduate of University of Illinois medical writing curriculum of the school of journalism. Publications, societies. Desires position as medical writer. Address: John W. Torrance Jr., 1731 E. 72nd St., Chicago 49, Ill.

• SURGEON: B.S., Harvard; M.D., Yale; trained university hospital. Diplomate, general surgery, F.A.C.S. Four years successful private surgical practice, one year partner in surgical group. Prefers academic appointment as either assistant or associate professor of surgery, any locality. Available September 1; early forties. For further information please write Woodward Medical Bureau, 185 N. Wabash Avenue, Chicago, Ill.

• PH.D.: Doctorate in zoology-endocrinology major. Have engaged in research in pharmaceutical industry in endocrinology, pharmacology, biochemistry, pathology and toxicology. Has served as research assistant at university, and has done pharmaceutical research for the Army. Seeks teaching and research position in medical school. Address: A-189.

• HISTOCHEMIST: For research project in large hospital in the East. Salary dependent on training and experience. Address: A-190.

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